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THE SCHUYLKILL RIVER HERITAGE CORRIDOR:
THE STUDY AND INTERPRETATION OF ITS CULTURAL LANDSCAPE

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TABLE OF CONTENTS

ACKNOWLEDGEMENTSiii
LIST OF FIGURESiv
LIST OF PLATES	vi
INTRODUCTION1
CHAPTER ONE: HISTORY AND SIGNIFICANCE OF THE SCHUYLKILL RIVER	6
CHAPTER TWO: HISTORY AND ORIGINS OF RIVER CORRIDOR MANAGEMENT -- NATURAL AND CULTURAL RESOURCES	28
CHAPTER THREE: CULTURAL LANDSCAPE THEORY AND PRACTICE	48
CHAPTER FOUR: THE APPLICATION OF CULTURAL LANDSCAPE THEORY AND PRACTICE TO RIVER CORRIDOR MANAGEMENT -- THREE CASE STUDIES	58
CHAPTER FIVE: CONCLUSIONS116
FIGURES	128
PLATES145
SELECTED BIBLIOGRAPHY	174

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LIST OF FIGURES

1. The Schuylkill River Basin, (From Water Resources of the Schuylkill River Basin, Water Resources Bulletin No. 3, 1968).
2. Physiographic Sections of the Schuylkill River Valley, (From Pennsylvania, Department of Environmental Resources, "Geologic Map of Pennsylvania," 1980).
3. Greenway Efforts, (Schuylkill River Greenway Association, Wyomissing, PA, 1989).
4. Case Study Sites.
5. Map of Hawk Mountain Sanctuary Area, (From U.S. Geological Surveys).
6. "Map of Philadelphia and Parts Adjacent" (1752), N. Scull and G. Heap.
7. Hawk Mountain Trails Map, (Hawk Mountain Sanctuary, Kempton, PA).
8. Map of Aqueduct Park Area, (From U.S. Geological Surveys).
9. Map of the Girard Canal, (From Smith, "Map of the Drainage Area of the Schuylkill River, 1886).
10. Deed Map of Aqueduct Park, (Samuel Russell for the Schuylkill River Greenway Association).
11. Sketch of Systems at Aqueduct Park.
12. Plan for Aqueduct Park, (Robert Bartmann for the Schuylkill River Greenway Association).
13. "A Draught of John Bartram's House and Garden as it appears from the River" (1758), John Bartram.
14. Approximate Boundaries of John Bartram's Farm in 1758.
15. Guide to Bartram's Garden, (John Bartram Association, Philadelphia, PA).

16. Map of Fairmount Park, (From Philadelphia Ranger Corps, "Philadelphia's Park System").
17. "Suggested Plan of Redemption," (Lewis, The Redemption of the Lower Schuylkill, 1924).

LIST OF PLATES

1. "Looking North at the Summit," Maurice Broun, 1938, (Hawk Mountain Sanctuary Scrapbook, c. 1934-40).
2. Looking North from North Lookout.
3. Allegheny Aqueduct, Looking Northeast.
4. "Buena Vista," Maurice Broun, 1942, (Hawk Mountain Sanctuary Scrapbook, 1940-49).
5. Looking North from North Lookout.
6. Schaumboch's from the Mountain Road (Route 895).
7. Schaumboch's from the South Lookout.
8. Remnant of "The Slide."
9. Signage for "The Slide."
10. Signage for "The Hall of the Mountain King."
11. The "River of Rocks" from South Lookout.
12. Signage for the Port Clinton Towpath Trail.
13. Towpath and Bumpers of Restored Aqueduct.
14. South (Upstream) Side of Aqueduct.
15. North (Downstream) Side of Aqueduct.
16. Aqueduct Capstones.
17. Ruin of Beidler's Mill.
18. Millhouse of Beidler's Mill.
19. Reading (Removed) and Pennsylvania Railroad Lines, Looking West.
20. Allegheny Aqueduct, 1899, (Meiser and Meiser, The Passing Scene, vol. 3).
21. Restored Canal Bed, Looking West.

22. Naomi Hotel, Seifert.
23. The Village of Seifert.
24. Allee Looking East, to River.
25. Allee Looking West, to House.
26. Cider Mill on River Trail.
27. River Trail at Bartram's Garden.
28. Recreation Fields to South.
29. Wildflower Meadow to North.

INTRODUCTION

In Henry David Thoreau's account of his travels on the Concord and Merrimack Rivers, he writes of rivers:

they are the constant lure, when they flow by our doors, to distant enterprise and adventure . . .
I had often stood on the banks of the Concord, watching the lapse of the current, an emblem of all progress, following the same law with the system, with time, and all that is made. . .¹

Our rivers and their valleys are often of great beauty or historic interest. Many of them are landscapes long-noted for their scenic attributes, natural resources and recreational opportunities. The geology and topography of river valleys in part determined their cultural development. Rivers provided highways for explorers, roads for travelers and merchants, power sources for early artificers, and a great object and subject for American writers and painters. Historically, the character of a river also has evoked a reflective quality, stimulating thoughts about our past and future.

In this thesis, river landscapes and their preservation are the subject. The focus of this thesis will be the role of cultural landscape theory as applied to the Schuylkill River "heritage corridor." Literature pertaining to cultural landscapes, especially for the rural countryside, has been growing, providing landscape preservation

guidelines to apply to the specific cultural landscape, and, for the following study, to the Schuylkill River Valley.

A land management technique is necessary for the preservation of river valleys. The concept of "heritage corridors" is one answer as it presents attempts to balance and enhance a river's many types of resources: natural, cultural, scenic, economic, and recreational. The origins of the "heritage corridor" idea are clearly tied to a broadening view in landscape studies and to a synthesis of natural and cultural resource management. As a formalized concept, however, heritage corridors are only six years old.²

A heritage corridor may be likened to strings of beads. The individual beads on one string may represent different types of proprietorship in the river valley. The sizes and shapes of such proprietorships and sites may vary from a city riverfront park, a corporate easement, to an abandoned railway purchased by a nonprofit association, or National Park Service land, to name a few.

Besides the different kinds of proprietorship, mentioned above, the beads may represent the various "heritage" themes of the corridor as well, with the river acting as a unifying element. The significant natural, cultural, scenic, economic, and recreational resources of a river valley are also linked in the concept of the "heritage corridor." When this management technique of linking

resources is applied to a river as proposed in a heritage corridor, the "beads" are strung together physically and politically upon the strand of the river. The river is the organizing element.

Varied interests along the river, concerning ownership and land use, for example, are addressed and incorporated into one comprehensive management plan. While some technical assistance and monies may come from a higher level of state or federal government, the heritage corridor is realized and run locally by communities. Hopefully, these corridors will present more than "fingers of green" for the people of these communities, but rather they will become, in fact, common land like a linear town green that is "permanently imprinted on the maps of these towns, and lengthens the perspectives of those who live in them."³

The Schuylkill River in southeastern Pennsylvania is currently being considered for both state and federal heritage corridor programs. The Schuylkill has a unique and significant character and specific management difficulties, but the river also may serve as a model for other American river corridors.

In the following study, the framework for specific analysis of the Schuylkill will be given in the first three chapters. In Chapter One, themes of its cultural history and related natural history are gleaned from a review of the

history and significance of the Schuylkill River. Many of these themes are generally typical of American rivers, but are at the same time, in their application, particular to the Schuylkill. In Chapter Two, the origins of natural and cultural landscape preservation are reviewed which define the heritage corridor concept and place it in the context of the American conservation movement. A description of the theory and practice of cultural landscape preservation, in Chapter Three, relates to the application of the corridor management tool to a landscape's historic land use themes. The information in these three chapters is necessary for an assessment of the Schuylkill. However, in an effort to more fully explicate and understand cultural landscape theory as it applies to riverscapes and, perhaps, suggest amendments or alterations, individual case studies are utilized. In Chapter Four, three sites were chosen that are representative of differing characteristic types of landscapes along the river. In the final chapter, the description and the analysis of the chosen sites leads to comments and conclusions on the application of cultural landscape theory and practice to the Schuylkill River, and other rivers in the country.

ENDNOTES TO INTRODUCTION

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CHAPTER ONE: HISTORY AND SIGNIFICANCE OF THE SCHUYLKILL RIVER

I. NATURAL HISTORY

While the emphasis of this thesis is on cultural resources, it is necessary to understand the river's natural environment because human activities are shaped by its geology, soils and vegetation. Also, in corridor management, natural resources are one type of "bead" that must be identified and considered in a river's resource plan.

The Schuylkill River basin is located in southeastern Pennsylvania. The headwaters are in the Kittatinny Ridge of the Appalachian Mountains in central Schuylkill County and northern Berks County. Two branches, the West Branch and the Little Schuylkill, join near Port Clinton. The river flows generally southeasterly to its confluence with the Delaware River in Philadelphia County. Its major tributaries are Maiden Creek and Tulpehocken Creek. The Schuylkill River basin is approximately ninety-three miles long and averages twenty-one miles in width, draining an area of 1916 miles.¹ (see figure 1)

The river flows through six different topographical zones. These physiographic regions from north to south are the Appalachian Mountains, Great Valley, Reading Prong, Triassic Lowland, Piedmont Upland and Coastal Plain. (see figure 2) In each section, geology determines the river's

form, soil type and quality, wildlife and vegetative habitats, as well as human settlement patterns and land use; each physiographic region supports a distinct landscape.

The Schuylkill's headwaters drain the Appalachian Mountains (Valley and Ridge Province) by steep and narrow hills. Valley walls reach elevations of as much as 1050 feet above stream beds.² The sedimentary sandstones, siltstones, shales and conglomerates are the result of a depositional environment shifting from marine to continental.³ This shift promoted the formation of rich anthracite coal seams at the north end of the basin.

In this region, moderate streams flow throughout the year because of substantial surface water and groundwater stores.⁴ Only the largest rivers cut through the ridges as the Schuylkill does at the Blue Mountain water gap. Forests dominate the ridges, and human settlement is concentrated in valleys.

Red oak/black oak/white oak forests cover the northern slopes and the foothills of southern slopes. Chestnut oak grow on dry, rocky crests and southern slopes. White pine/hemlock forests are in cool, moist valleys and gaps of the range.⁵ It is the wildest area of the region. The human population is low, and there is a large and diverse wildlife population. Each fall, falcons, eagles, and hawks migrate along the Kittatinny Ridge of the Appalachian Mountains in this area.

At the dramatic edge of this region, the gap in Blue Mountain near Port Clinton, the river enters the Great Valley section (also the Valley and Ridge Province), one of the great agricultural regions east of the Rocky Mountains according to a National Park Service study of the area.⁶ In the Great Valley, the Schuylkill is "U"-shaped in section, and land is low and rolling. In the northern three-fourths of the Valley where overall elevation and relief are greater, shales are interbedded with sandstone and limestone. Carbonate rocks, limestones and dolomites compose the flatter, southern quarter, south of Leesport. The carbonates store and transmit groundwater exceptionally well, and soils derived from limestone bedrock are prime for agricultural use.⁷ Settlements are small, separated by farmland.

The Great Valley is the most broken of the originally forested areas. Trees -- oak, tulip poplar, black gum, and black walnut -- are primarily in small woodlots and along hedgerows. Dominant floodplain vegetation includes sycamore, black willow, silver maple, white ash and box elder.⁸

The Schuylkill flows by the Reading Prong, a finger of the New England Province. The rocks are mostly gneisses that are igneous and metamorphic rocks that have been folded and uplifted.⁹ Mount Penn and Neversink Mountain are examples of mountains in this region.

Sparcely settled because of the rugged topography and limited water supplies, it is also the second most forested area, after the Appalachian section. Chestnut oak is the primary tree species with an understory of mountain laurel, sassafras and dogwood.¹⁰

The Triassic Lowland (Piedmont Province) section begins below Reading. The flat to gently rolling topography is punctuated by long ridges and isolated hills. Above Pottstown, the geology is sedimentary beds -- reddish brown shales, siltstones, sandstones and conglomerates. Below Pottstown, red, gray and black shales predominate.¹¹

Much of the lowland is farmed, but industrial and commercial towns like Birdsboro, Pottstown, Phoenixville and Norristown are also located in this region. In this section, the river channel meanders and divides into smaller channels or braids. It is wide, shallow, and easily eroded with gentle slope and flow. Small islands and bars form.¹² The dominant vegetation is the same as that of the Great Valley: sycamore, willow, box elder, vines and grasses. Diverse communities of plants and animals exist because of the habitats created by the river's changing flow pattern.¹³

The Piedmont Upland Section (also Piedmont Province) runs from Norristown to the Fairmount Dam in Philadelphia and is underlain by several different rock types. Upstream of the Plymouth Dam in Chester Valley, carbonate rocks are

drawn on heavily for domestic and industrial use.¹⁴

Igneous and metamorphic rocks of the lower section produce a much higher overall relief and steeper river banks.¹⁵ The Wissahickon schist is a well-known stone of this area.

The Fall Line marks the end of this section. Like Baltimore, Washington, DC, Wilmington and Trenton, the Fall Line was the historic settlement site for such cities as it was the farthest, western-most navigable point on rivers flowing to the Atlantic. In this agricultural-woodland habitat, the vegetation is like that of the Great Valley and Triassic Lowland. Where land has been disturbed, ailanthus, chokecherry and honeysuckle occur.¹⁶

Below the Fairmount Dam, the Schuylkill is part of the Delaware Estuary of the Atlantic Coastal Plain. The river flows over unconsolidated and semi-consolidated sands, clays and gravels that underlie the embayed section of the Coastal Plain,¹⁷ creating level terrain for Philadelphia's dense urban development. Primary non-wetland vegetation consists of blackjack oak, post oak, American holly, pitch pine and Virginia pine with an understory of dwarf blueberries, smilax, and other evergreen heaths and ferns.

II. CULTURAL HISTORY

The cultural history of the Schuylkill River Valley is a complex story of people, places and activities. The Dutch were the first explorers and settlers of the Schuylkill and called the river Varshe Rivierte, "the little fresh water river." The Schuylkill waters were always noted for being purer and colder than that of the Delaware River.¹⁸ The other Dutch term for the river, Scokilhl [sic], which became the current name, refers to the hidden nature of the river at its mouth;¹⁹ it was not clearly visible as explorers ascended the Delaware. The Lenni Lenape Indians referred to the river as Manaiunk meaning "the place where we drink"²⁰ and also as "the mother." Maiden Creek, a tributary above Reading, was called Onteelawanee or "little daughter of a great mother."²¹

The Swedes, who had the first permanent, European settlement on the river (Tinicum Island near Philadelphia), were defeated by Dutch Governor Styvesant in 1655. After 1664, the territory was claimed by England, but not officially granted to William Penn until 1682. Penn's "holy experiment" opened up the colony to Quakers from England, Wales, Germany and Ireland. Because transportation was difficult on the river, the first settlement spread south along the Atlantic coast. In 1700, the large influx of Palatine Germans began to push settlement upstream.²² Penn

learned of the one hundred miles of boatable river above the falls and had high hopes for the river. He saw a potential link to the Susquehanna River. In the excerpt of a letter to Ralph Fretwell that follows, he describes a journey from the Schuylkill to a tributary, the Tulpehocken Creek, and a portage to Swatara Creek which leads to the Susquehanna River:

I could only add, that the Schuylkill, called by the Dutch, but by the Indians Manaiunck, running by the western banks of Philadelphia, bateing one fall, not three foot high, is botable wth flattts 200 miles, then there are 5 braches, or fountains feeding 5 branches, one of wch is boatable a days Journy, where unlaiding, in a days time a wagon (for the ground is pretty even) may goe to another River, almost as big as the Shulkill, which is boatable to the Susquhanagh in one day. [sic] (William Penn to Ralph Fretwell, April 3, 1684)²³

Themes of historic activity center largely on agriculture, industry and transportation that flourished in the Schuylkill Valley after Europeans settled in the area. The Pennsylvania Historical and Museum Commission classifies historical properties, buildings and sites with these themes. The state's new heritage corridor program asks applicants to choose from eight Pennsylvania industrial themes for their park's interpretation: iron and steel, coal, textiles, machine and foundry, transportation, agriculture, lumber and oil. With the Schuylkill Valley, significant, related topics like fishing and hunting, recreation, and house sites must also be developed to fully

understand the river as an ever-changing settlement corridor.

Fishing

The cultural landscape of the Schuylkill was formed in relation to its physical features. One important direct resource of the river, and one that the river was famous for, was its shad. Before the dam projects of the nineteenth and twentieth centuries, shad, hickory shad, alewife and blueback herring ascended the river from the sea to the Pottsville area to spawn.²⁴ Fishing was especially good in the deep, narrow, fast-flowing sections of the river through Manayunk (the Piedmont Upland) and below Neversink Mountain (the Reading Prong). Indian settlement, colonial diet and transportation are themes related to this resource. The Lenni Lenape Indians depended on the river for fishing and hunting. The annual movement of the fish was important to them, and they trapped and hunted animals that came to the Schuylkill and its tributaries to drink and eat. Indeed, a recent archeological survey of a portion of the Appalachian watershed shows how closely the Indians were tied to the river. Traces of their activity dropped off significantly five hundred feet away from fresh water rivers or streams.²⁵ European settlers were also avid fishers, and a conflict of interest arose between fishermen and boaters when fishermen's weirs and racks obstructed the

movement of canoes and barges. In the midst of a long-standing, colorful battle, state legislation in 1738 prohibited weir and rack construction.²⁶ Fishing and hunting as sport will be discussed under the heading "Recreation."

Agriculture

Agriculture was the primary livelihood of the first settlers to the Schuylkill River region. Especially in the Great Valley section, the land was remarkably fertile by European standards. Hickory, walnut, and chestnut with black oak attracted the German immigrants who associated these trees with good farming soils.²⁷

In the eighteenth century, the agricultural emphasis was on the growing and processing of wheat. Pennsylvania was the leading colony in agricultural production, and wheat flour was the leading export of the region.²⁸ In Berks County, for example, there were twenty-seven flour mills and 114 grist mills by 1840.²⁹ Many farms and mills like the Roller Mill in Pottstown remain as evidence of this theme in the Schuylkill River Valley.

Lumber

As land was cleared for farming, timber was cut for building purposes in the many water-powered sawmills along the river. According to Nolan's history of southeastern

Pennsylvania, there were one hundred sawmills in upper Berks County before 1800.³⁰

In the period of time after colonial iron furnaces and forges began operating, and before coal was commonly used as their fuel, there was a great demand for timber as charcoal. (see "Iron" below) From late spring to early fall, charcoal makers or colliers tended pits filled with smoldering stacked wood.³¹ This practice left the ground sterilized and bare; charcoal burns can still be seen on mountain sides in the Appalachians today.³²

Textiles

The Revolution forced colonists to become economically independent from foreign manufacture; domestic industries began to diversify and expand after the war. While the Schuylkill Valley remained primarily agricultural, non-farm production grew to include cotton and woolen fabrics, cut stone, books and beer by the middle of the nineteenth century.³³ Textile manufacture centered on Philadelphia, but Reading was also known for its textiles and hosiery. Woolen mills, still operated by the Krooks family in Manayunk, and the Yuengling Brewery in Pottsville are two examples of living monuments of manufacture to the Schuylkill River Valley.

Iron

Rich iron fields also stimulated Pennsylvania's industrial growth. At the beginning of the American Revolution, colonial self-determination was objectified by the active iron industry in America.³⁴ In Pennsylvania, the earliest iron works were built along the tributaries of the Schuylkill River.³⁵ The Valley provided the four essential ingredients: iron ore, a stream for water power, limestone for flux, and wood for charcoal. Examples of early sites that are public parks today are Cornwall Furnace (1742) on Furnace Creek and Hopewell Furnace (1770) on French Creek.

Coal

There are only two sources of anthracite or hard coal in the nation. Both are in Pennsylvania, and one is in Schuylkill County, the river's headwaters area.³⁶ Although William Scull's 1770 map of Pennsylvania noted "Coal" along the west branch of the Schuylkill, it was the Schuylkill Navigation canal that gave the first real impetus to mine the coal.³⁷ In 1825, there was a great rush of capitalists, speculators and adventurers to the area.³⁸ A coal breaker in Llewellyn and a coal hopper southeast of Pottsville are just two physical artifacts left from the enormous "coal rush" in the area. Valley residents are

still employed in the mines and have many stories of their coal history.

Machine and Foundry

Pennsylvania was also the "machine shop" of the nation from its founding to 1920. The Schuylkill River Valley was a major manufacturing site for the first stationary steam engines, steam locomotives and power looms. Locomotives were made by the Baldwin Company in Philadelphia and the Reading Company in Reading. Textile machinery making complemented the manufacture of knit textiles in the Valley. The Berkshire Knitting Mills in Wyomissing were considered the largest of their type in the world.³⁹

Transportation

The physical character of the Schuylkill shaped transportation in the Valley. The river is shallow in many regions, with rocks and shoals. Canoes, rafts and low-draft "Reading boats" were the early vehicles used on the river for their ability to maneuver in these conditions. To stay competitive with other east coast markets and to speed the passage of hinterland goods to the river's mouth, a canal for the Schuylkill was proposed.

During the nineteenth century, the building of more than five thousand miles of canals signaled the first large-scale transportation system for our young nation and the

first time professional designers made a significant contribution to shaping the American landscape.⁴⁰ The Schuylkill Navigation Company was incorporated in 1815 and provided for the construction of a canal and slackwater system along the Schuylkill from Philadelphia to the mouth of Mill Creek in Schuylkill County.⁴¹ Work on this navigation system that utilized the river and segments of lock canal began in 1816.⁴²

Canal trade flourished in its early years. Wheat, corn, potatoes and bags of wool were typical materials shipped downstream; household goods and farm implements passed upstream.⁴³ Coal was the main cargo by 1842 when the Philadelphia and Reading Railroad opened. The canal was enlarged to compete with the railroad and combat problems with flooding and culm siltage. Although canal operations were defunct by 1919⁴⁴, many artifacts of canal days remain: port towns like Port Clinton that developed because of the canal, locks and related buildings such as the lockhouse in Leesport, aqueducts like that in Gibraltar (a case study site that will be discussed in Chapter Four), and the canal bed and towpath itself.

Railroads followed the main stem of the river and many of its tributaries, paralleling the canal as well. Railroad bridges, stations, and abandoned track, as well as tourist passage on old lines like the W.K.&S.,⁴⁵ serve as reminders of the nineteenth century railroad.

Nolan's description of the railroads of Schuylkill County stresses their tie to the coal industry, the topography of the region, and the pride in this symbol of progress.

The railroad system of Schuylkill County embraces a network of roads more extensive and intricate than that of any other region of equal extent in the country. These roads ramify in all parts of the county where coal is mined, follow the windings of streams through the many valleys and ravines, climb the mountains, over planes or by winding along their sides, or pass under them in tunnels.⁴⁶

The Philadelphia and Reading Railroad, which opened for public use in 1836, became the prominent line along the Schuylkill. After leasing and purchasing various lines in the coal region and the Schuylkill Navigation Company, it was in control of the transportation to Philadelphia.⁴⁷

In addition to passage in or along the river, aids in crossing the river are a second group of cultural artifacts, indicators of historic land use. Bridges, some engineering "firsts," were much used, talked and written about and painted. In Philadelphia, three inaugural projects were the permanent bridge at High (Market) Street, White and Hazzard's wire-rope footbridge at the falls, and Ellet's suspension bridge at Fairmount Dam.⁴⁸ The first upstream bridge was a wooden structure built in Reading in 1818.⁴⁹

Fords and ferries preceded the bridges, and play an important role in the Valley's early history. In 1777-8, for example, Swede's Ford south of Norristown and Sullivan's Crossing downstream of Fatland's Island were keys to

Revolutionary War strategy.⁵⁰ Early Philadelphia area ferries included one at the mouth of the Wissahickon, Sculls ferry near where the Spring Garden bridge is now, a ferry at Market Street, and a lower ferry at Gray's. These ferries, and others are indicated on the 1752 Scull and Heap map of Philadelphia.

House Sites and Recreation

The first European settlement in the Schuylkill River Valley was by Swedes south of Philadelphia in the seventeenth century. In the seventeenth century, they developed a small farming community between the Schuylkill and Cobbs Creek called Kingsessing. "Kingsessing" was a Lenni Lenape Indian word for "meadows," fertile agriculture land for the Swedes. The Scull and Heap 1752 map of Philadelphia shows many eighteenth century residences along the Schuylkill including John Bartram's farm (a case study site that will be discussed in Chapter Four), "Woodlands," and "Lemon Hill." Many houses were sited along the Schuylkill as the riparian setting afforded good views, accessibility to river transport, and good alluvial soils.

River recreation is another cultural history theme of the Schuylkill. Fishing, rowing, swimming, and promenading along the banks were popular nineteenth century activities. The Schuylkill has national prominence as a site of rowing and boatclubs; Philadelphian Thomas Eakins painted crew

scenes that popularized and memorialized this nineteenth century image.

An even older social sporting organization was related to fishing. In 1732, two fishing companies were formed on the river, Fort St. David's and the Schuylkill Fishing Company. The latter moved its "castle" from the west side of the river where the Girard Street bridge now crosses, to two locations near Rambo's Rocks when the Fairmount Dam was built in 1822, to the mouth of the Wissahickon, and lastly to a Delaware River site near Andalusia.⁵¹ Another fishing club, Fort St. David's, was originally located near the Falls. They joined the Schuylkill Fishing Company after the Revolution, and the two clubs enjoyed fishing, dining and socializing along the "beautiful stream, an honored monument of pristine days, and a cherished felicitous association of the present."⁵²

Upstream recreation included resort hotels and camps in the mountains and river carnivals near Reading. Although all river uses, from recreation to transportation, were constantly evolving, pollution and coal siltage severely altered the use of the river by the early twentieth century.

River Deterioration

According to a National Park Service study of the river, boat coal, which had initially brought such prosperity to the river, began to interfere with navigation

and recreation as early as 1853 because of its related pollution and sedimentation.⁵³ At mid-century, historian John Watson bemoaned the loss of the clean, quiet river near Philadelphia; "the river scenery and banks of the Schuylkill were once picturesque and beautiful . . . how now changed the scene to a bustling coal mart."⁵⁴ In the 1940 guide to Pennsylvania produced by the Works Progress Administration's Pennsylvania Writers' Project, culm pollution is described in a tour of the upper Schuylkill: "south of Pottsville the route parallels the Schuylkill River, here shallow and dark."⁵⁵

The river's deterioration is attributed to a combination of acid drainage from mines, domestic pollution and industrial waste.⁵⁶ The coal mine drainage problem originated from a rather small part of the watershed in the southern portion of Schuylkill County. During the height of mining in the 1800s and early 1900s, nine railroad companies owned ninety percent of the coal in these anthracite fields.⁵⁷ Profit was derived not from the coal's mining, but its transport, and mining practices were relatively uncontrolled.⁵⁸ Because the coal was positioned in steep vertical seams, waste material was brought out with the coal. After the breaker process separated the coal from the waste material, impurities were flushed into streams.⁵⁹

Coal silt or culm affected the health of the river by clogging the natural floodplain filtering process. This led

to an increase in pollution. Fish were eliminated by pollution, farmland was damaged by flooding, and towns and cities were burdened by the difficulty and expense of purifying Schuylkill water for public use.⁶⁰ Silting and culm deposits also interfered with river navigation.

Riparian communities turned their backs on the river in the nineteenth century. The river's condition focused people away, and the railroad drew their attention. Mountains and ocean spots became their preferred recreational landscapes.⁶¹

In response to the under-utilization and deterioration of the River's natural and cultural resources, steps were eventually taken to clean up and manage the Valley. A brief overview of natural and cultural resource management will lead us to the heritage corridor concept that celebrates the natural and cultural themes of the Schuylkill's history and significance.

ENDNOTES TO CHAPTER ONE

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CHAPTER TWO: HISTORY AND ORIGINS OF RIVER CORRIDOR MANAGEMENT -- NATURAL AND CULTURAL RESOURCES

Having reviewed the history and significance of the Schuylkill to bring forward cultural themes of the river and to describe the underlying natural history that shaped human settlement and land use, river corridor and cultural landscape management must be addressed. Before applying cultural landscape theory and practice to river corridor management, a new step in river management, current forms of river corridor management and their origins will be reviewed in this chapter. The history of conservation efforts directed at the Schuylkill will be woven into a brief, general overview of American river conservation work. Both histories, of river conservation generally and the Schuylkill's specifically, lead to two current, related management ideas for the Schuylkill: greenways and heritage corridors.

The conservation of rivers stemmed from a concern for natural and cultural landscape protection that evolved from national parks¹ to park networks² and from battlefields and monuments³ to preserved historic and aesthetic views.⁴ Fiscal constraints, the diminution of "open" lands, and a broadening appreciation for the vernacular landscape led to this shift in management of natural and cultural landscapes.

While the American Indians of the pre-colonial era are generally considered to have been caretakers of the land, protecting and promoting their food resources and related habitats,⁵ European settlers generated a continuous tension for themselves concerning their land use, since they both squandered the land and were in awe of it. Anxious and embarrassed that their cultural history seemed nonexistent, early settlers celebrated the land as vast and wondrous. There seemed to be no end to the land and its resources. Yet as trees were cleared, population grew, industry and cities formed, fears for the land and its resources were beginning to be articulated. There was a subsequent call for the creation and preservation of the natural and pastoral quality of American landscapes in urban areas. Well-known designed landscapes such as Mt. Auburn (1831), a rural cemetery, and New York City's Central Park (1853) were responses to this need.⁶

American Transcendental writers and painters also stressed the spiritual and aesthetic importance of the wilderness. In "Essay on American Scenery" (1835), painter Thomas Cole describes the tension between progress and preservation:

There are those who regret that with the improvements of cultivation the sublimity of the wilderness should pass away: for those scenes of solitude from which the hand of nature has never been lifted, affect the mind with a more deep toned emotion that aught which the hand of man has touched. Amid them the consequent associations are of God the creator -- they are his

undefiled works, and the mind is cast into the contemplation of eternal things.⁷

Frederick Law Olmsted, a prominent and eloquent spokesman for the American landscape, promoted the protection of American wilderness as well as the formation of pastoral settings. In 1872, a first major conservation step was taken, and Yellowstone became the world's first national park.⁸ John Muir was delighted by what he saw as "the tendency nowadays to wander in the wilderness."⁹ He felt that people were seeing nature, for the first time, not as a commodity but as a "necessity" and a "fountain of life."¹⁰

The National Park Service, established in 1916, was initially conceived as a nature-oriented organization, protecting the wonders of the wilderness, but began incorporating cultural preservation into its theory and practice less than two decades after its founding. During the Depression, the Historic American Building Survey (HABS) was formed at the suggestion of architect Charles E. Peterson. The need for historical documentation, jobs and a celebration of American cultural heritage was recognized, and between 1933 and 1941, 693 buildings were recorded.¹¹ Another Depression-initiated group, the Civilian Conservation Corps (CCC) worked to develop two National Park sites with cultural history emphases -- Colonial National Historical Park in Yorktown, Virginia, and Northern New Jersey's Morristown National Historical Park.¹²

In this same decade, the recreation of the Colonial Williamsburg Foundation paved the way for large-scale interpretation and "created, unintentionally, the first interdisciplinary training program for historic preservation professionals,"¹³ and the first historic districts in America were formed. Charleston's "Old and Historic District" was designated in 1931, and the Vieux Carre district in New Orleans was established in 1936. The birth of historic districts illustrates the movement away from thinking of architecture as separate, distinct monuments and evidences the new trend toward understanding the integrity, interpretative opportunities, and sense of place revealed in the "tout ensemble."

In the field of natural land preservation in the 1930s, Benton MacKaye, co-founder with Aldo Leopold of the Wilderness Society, and partners with Lewis Mumford and Clarence Stein in the Regional Planning Association of America,¹⁴ worked toward creating networks of parkland in the United States that would provide respite from the nation's crowded conditions and would preserve ecological systems. In The New Exploration, MacKaye describes the proposed system as

. . . the main open way across the metropolitan deluge issuing from the ports of the American seaboard. This open way, when it really opens, would form the base throughout eastern populous America for controlling the metropolitan invasion.¹⁵

When developing a Boston plan of open space networks as a case study, he targeted steep valleys along streams, river bottoms, swamps, unsettled beach areas, and mountain crestlines and summits.¹⁶ The Appalachian Trail, a two thousand mile long hiking path and the first interstate ridgeline park, was formed in 1931 as part of this plan.

Theoretically tied to MacKaye's bold plan for the Appalachian network and a decade of broadening cultural awareness was a project in the West. In 1937, the governor of Nebraska created the Old Oregon and Mormon Trails National Parks Area Commission to study the possibility of creating a parks system in Nebraska and Wyoming featuring surviving trail segments, natural landmarks and historic sites like Fort Laramie.¹⁷

While the preservation of natural and cultural landscapes, generally, and linear parks, specifically, was blossoming in the early part of this century, the idea of rivers as public land lagged behind. According to W. Kent Oleson, president of American Rivers:

When we Americans speak of "public lands," we usually refer, knowingly or not, to our terrestrial estate -- forests, mountains, prairies, valleys, deserts. In short, the landscape. This emphasis on the solid earth, rather than on aquatic systems, is reflected in the evolution of our nation's property laws. They seem to deal more efficiently with land, something that rarely moves of its own will, maintains its general shape, holds up when you walk on it, and conforms to describable metes and bounds. . . .¹⁸

When rivers are addressed, traditionally, clean water and free-flowing water are the first considerations of river

conservation work on the state and federal levels.

In Pennsylvania, two laws were passed by the Commonwealth in 1945 to improve the water quality and the navigability of stream corridors state-wide. The Clean Streams Act prohibited pollution of the streams in the state, and the Desilting Act provided for the removal of silt from the Schuylkill's channel and banks.¹⁹ The Schuylkill River Project, a state and federal partnership, was initiated in 1947;²⁰ between 1948 and 1967, over thirty-four million cubic yards of coal fines and sediment were dredged from the river.²¹

The next prominent decade of conservation and preservation was the 1960s, with highlights including the publication of Rachel Carson's Silent Spring (1962), passage of the National Historic Preservation Act (1966) and the National Environmental Policy Act (1969), designation of Redwoods National Park (1968), and the creation of the Environmental Policy Administration (1970). The decade was capped off with the nation's first Earth Day. The first major federal initiative concerning the management of river valleys, which in turn paved the way for state and local actions, was the creation of the National Wild and Scenic Rivers system in 1968. Senator Gaylord Nelson is credited with sponsoring the bill, and it was signed into law by President Johnson along with the National Trails system.²²

Both programs emphasize a linear conservation technique that had been growing in popularity for several decades.

According to Oleson, the goal of the river law (Public Law 90-542) was to complement the established national policy of dam and other construction needs with a policy that would preserve selected rivers or sections thereof in their free-flowing condition.²³ The law calls for the identification of significant rivers, an inventory of their resources, and regulation of designated rivers or segments of rivers. According to the law, the section has to be five or more miles in length, free-flowing, generally undeveloped, and adjacent or within a related land area that possesses outstanding geological, economic, cultural, historic, scenic, botanical, recreational or similar values.²⁴ In terms of regulation, no federal agency can approve (through licensing) or assist in the construction of a water-resource project on a protected river.²⁵

Two sections of the Schuylkill watershed are listed as National Wild and Scenic Rivers. Five miles of the Wissahickon Creek in Philadelphia County is noted for its recreational value to metropolitan Philadelphia as well as for botanic and historic attributes.²⁶

Along French Creek, an eighteen mile segment from Hares Hill Road to the headwaters in Hopewell Village of Berks and Chester Counties, has three areas of significance according to the federal inventory. It has hydrologic value as the

northern-most and least developed free-flowing river within the Piedmont Province. There are also National Register for Historic Places sites and an historic district related to the River in this section. Lastly, geologically, the designated segment includes the unique Falls of the French Creek, a series of diabase boulders.²⁷

Pennsylvania is one of thirty-one states with its own scenic rivers statute.²⁸ The Pennsylvania Scenic Rivers Act 283 (1972), as amended by Act 110 of 1982, established a state level Scenic Rivers system and designation procedures for river segments having outstanding aesthetic and recreational values. Protecting locally significant rivers through cooperative and voluntary resource management is the goal of the program.²⁹

Floodplains of rivers, in addition to free-flow and water quality, are an integral part of a river's system as they provide for floodwater storage, the cleansing of river pollutants, and wildlife habitats as well as recreation and education opportunities for people.³⁰ Municipal zoning guidelines with requirements pertaining to steep slopes, wetlands and floodplains may formally protect these areas and limit their development.³¹ The realization that these floodplain and river areas could function as open space led to the idea of greenways. Greenways or greenline parks are recognizable, distinctive landscapes, and there is a sense of continuity in the land. Patterns of land use and the

cultural lifestyle of residents create this atmosphere.³²

As with non-riparian trails, accessibility to these areas is a primary consideration in addition to natural and cultural resource preservation; proponents of greenways see them as green fingers reaching out to where people live or which they can reach.

A source of this conservation concept comes from densely populated European countries like England and France that promoted greenline parks in the early twentieth century in an effort to provide strips of green to protect resources and provide recreational opportunities. In 1949, England established a system of greenlines. Until then, the country had lacked a formal national park system, and the only large tracts of rural land had been in private ownership for centuries.³³ On maps, green lines are drawn around this type of park area, reflecting a shared public/private ownership and decision-making. By contrast, U.S. parks traditionally have been shaded in with green color to illustrate sole, complete ownership by a public agency.³⁴ In England, the laws called for no change in ownership of the land but provided public access.

In this country, during the late nineteenth century when industry and leisure were both developing to a new height and the frontier was officially deemed closed,³⁵ six million acres of the Adirondacks in New York State were set aside to protect its resources against logging abuses

threatening watersheds. The six million acres was protected by law from unmonitored development.³⁶ Today, two-thirds of the land is still privately owned, and the area has a new comprehensive management plan.³⁷ The Pinelands of New Jersey and the Yakima greenway in Washington State are two contemporary examples of this greenline or greenway phenomenon.

The Schuylkill River Greenway Association (SRGA), formed in 1974, has an overall goal to create a greenway for the full length of the Schuylkill River. The majority of their success to date has been in Berks County. Figure 3 illustrates how SRGA is fitting together pieces of land. These "beads" represent various resources and activities. Related issues in its agenda are water quality, river recreation, river accessibility and cultural history preservation. The organization was instrumental in the designation of the Schuylkill as Pennsylvania's first Scenic River (1978). In 1988, three more segments, thirty-one miles of two tributaries in Schuylkill County and a 5.2 mile section in Montgomery County, were added to the Pennsylvania Scenic River system. The organization's activities include accession of riverfront land, work with citizen's groups in acquisition and management of riparian land, and public forums and promotion of the greenway concept in local communities. Three important studies have resulted from SRGA's involvement with public agencies. These form an

important backbone to current and future greenway work, especially in Berks County.

The Schuylkill River Study is a major work published in 1979 by the Pennsylvania Department of Environmental Resources. It served as the nomination for the Schuylkill River to the state scenic rivers program. The study includes inventories of natural, cultural, historic and recreational resources as well as information concerning outstanding visual features, impounding basins, public sewage treatment plants, the historic canal route and recreation/conservation links (existing and proposed).

The Schuylkill River Greenway Study (March 1984) by the National Park Service calls for the protection of cultural resources and for their incorporation into all greenway efforts. Suggestions for the goal's implementation include preservation of all remnants of the Schuylkill and Union Canal.³⁸ The development of a comprehensive trail network and a river-long trail system, protective zoning and subdivision laws, and enhancement of river-related recreation opportunities are other recommendations of the study.

A land-use model was also proposed in the Schuylkill River Greenway Study. The "preservation zone," minimally the size of the river's flood hazard area, is a zone of maximum protection. Development is discouraged, and agricultural use is encouraged. Compatible land use, wooded

slopes and the protection of scenic vistas are encouraged in the "conservation corridor" which surrounds the preservation zone. This secondary boundary varies with terrain and resources.³⁹

A more specific design guide for future development along the river was published by the Pennsylvania Department of Environmental Resources in January 1984 to "insure harmony with existing design elements and historic characteristics of the Schuylkill area."⁴⁰ Rural, village and urban sites were considered in the Great Valley, the Triassic Lowland and the Piedmont. In guidelines for settings, suggestions relate to the maintenance of landscape features and the enhancement of recreational opportunities. Details like steps, benches, and plantings are also reviewed.

Two current SRGA projects are a canal park and a state heritage park application. The Allegheny Aqueduct in Robeson Township (which will be discussed more extensively as a case study in Chapter 4) has been restored, and the rehabilitation of the site as a park is in the final planning stages. The park will be an important bead on the greenway necklace for SRGA, as illustrated in figure 3.

The river corridor was nominated by the organization for the first phase of the Pennsylvania Heritage Parks program. In April, 1990, SRGA will learn whether or not it will receive grant money for a heritage park feasibility

study. The primary boundary of the park or corridor, by SRGA's definition, is determined by the riparian communities' legal boundaries; the secondary boundary for this park study is that of the five riparian counties, Schuylkill, Berks, Chester, Montgomery, and Philadelphia. (Refer to figure 1).

The heritage corridor or park concept, as defined by the National Park Service, is a type of greenway. Like the general definition for a greenway (see pages 35 and 36 of this study), a "heritage corridor" is a regionally identifiable and significant landscape that is the focus of a public/private partnership to recognize, organize and communicate natural, cultural, recreational and economic attributes, to protect important values, stimulate local economy, and improve quality of life.⁴¹

During the last decade, the National Park Service has been searching for a new method for its involvement in public parks that would have broader, yet less stringent, implications. This feeling grew out of increasing public support for cultural preservation and landscape values, juggled with financial constraints and a policy of the Reagan years that seriously questioned the appropriateness of federal involvement in acquiring additional parks.⁴²

The preservation movement, in general, has shifted focus from monuments to individual structures, and from

sites to large, multi-resource historic districts.

Districts, where only front facades mattered, yielded conceptually to the idea of districts where interiors, back yards, paving materials, trees and views were considered important. For example, Georgetown, a Colorado historic district, encompasses the entire corporate limits of the 1859 mining town. The town is in a valley, and the district boundaries extend up the surrounding mountains.⁴³

According to Gerald Adelmann in his article on the Park Service's heritage corridor plan for the Illinois and Michigan (I & M) Canal,

this shift has become even more pronounced in the emergence of new, broader coalitions among preservationists, conservationists and other professionals who share an interest in protecting the distinctive features of our regional landscapes. Growing national interest in heritage parks and gateways reflects this evolution and parallels the National Register's increased emphasis on developing historic context.⁴⁴

The idea of a heritage corridor began in Massachusetts when the state initiated a system of parks in industrial cities to celebrate cultural heritage. The Park Service's first formal involvement was in the Lowell National Historical Park which was established in 1978. The park was unique in the early role it played in the integration of historic preservation, public education and economic revitalization activity.⁴⁵ The precedent for minimal federal land ownership was also established at Lowell. Less than four of the park's 140 acres are owned in fee. The

federal emphasis is on easements, agreements with private property owners and technical assistance.⁴⁶

In 1985, the Blackstone River Valley in Massachusetts and Rhode Island was designated as a national heritage corridor for its nationally significant role, like Lowell, in the American industrial revolution. In southwestern Pennsylvania, the idea has been applied to a nine county area, "America's Industrial Heritage Project." Two canal corridor parks, the I & M Canal in Illinois and Michigan and the Lehigh and Delaware Canal in Pennsylvania were established in 1984 and 1988 respectively. The Schuylkill River is currently an eligible candidate for "heritage corridor" status on the federal level.⁴⁷

Like Massachusetts, the state of Pennsylvania has its own heritage parks program, and the Schuylkill River Valley is presently being considered in the Department of Community Affairs' first review stage as mentioned above. The goals of the program are very similar to those of the National Park Service: improve community economics, strengthen intergovernment cooperation, conserve the region's significant and distinctive cultural resources, link and promote the region's natural, recreational and historic sites, and educate residents and visitors about the key role the region has played in the industrial heritage of Pennsylvania and the nation.⁴⁸ The industrial heritage focus is further delineated by listing possible themes of a

Pennsylvania state heritage park. Iron and steel, coal, textiles, machine and foundry, transportation, agriculture, lumber, and oil are the nine themes to choose and, potentially, to combine when considering a region's suitability for this designation. It is to be noted that "House Sites and Recreation" are not included if the focus is exclusively industrial. Yet, culturally, such resources are a part of the "heritage corridor." With both the national and state heritage parks, comprehensive land-use planning and interpretation follow the initial inventory and designation phases.

The brief overview of the history and origins of river corridor management, as presented above, illustrates the evolving nature of this discipline. The need for protected rivers and for their related natural systems has been well established. Cultural riverscape preservation and consequent interpretation is becoming increasingly important, especially in terms of increasing awareness of industrial artifacts.

After this thesis specifically addresses cultural landscape management in Chapter Three, that theory and practice will be utilized in analysis of specific sites along the Schuylkill. Guidelines for the study and interpretation of a river network, linked by inter-related natural and cultural themes, will be explored.

ENDNOTES FOR CHAPTER TWO

1. The first two national parks, for example, were Yellowstone (1872) and Yosemite (1890).
2. The Blackstone National Heritage Corridor (1985) was the first river corridor designated under the National Park Service heritage corridor program.
3. At Gettysburg, for example, "[a]s early as six weeks after the battle in 1863, efforts were made to preserve the topographical features of the battlefield." (U.S. Department of the Interior, National Park Service, Mid-Atlantic Division, Division of Park and Resource Planning and Gettysburg National Military Park, Boundary Study, Gettysburg National Military Park, (draft), 1988, 4.
4. Two examples in the legal sphere during the last five years are: Corey Outdoor Advertising, Inc. v. Board of Zoning Adjustments, 327 S.E. 2d 178 (Ga. 1985). Court ruled in favor of upholding a sign ordinance that protected the historic setting of historic properties in Atlanta. Landmark Land Company, Inc. v. City and County of Denver, 728 P. 2d 1281 (Colo. 1986). A Denver zoning amendment that protected the view of the mountains from a city park was upheld.
5. See William Cronon, Changes in the Land: Indians, Colonists, and the Ecology of New England (New York: Hill and Wang, 1983).
6. Thomas Bender, Toward an Urban Vision: Ideas and Institutions in Nineteenth Century America (Baltimore: The Johns Hopkins University Press, 1975), 81 and 173.
7. Thomas Cole, "Essay on American Scenery" (1835), In American Art, 1700-1960, John W. McCoubrey, ed. (Englewood Cliffs, NJ: Prentice-Hall, Inc., 1965), 102.
8. Alfred Runte, National Parks: The American Experience (Lincoln, NE: University of Nebraska Press, 1987), 33.
9. John Muir, Our National Parks (New York: Arno Press, Inc., 1901), 1.
10. Ibid.

11. William J. Murtagh, Keeping Time: The History and Theory of Preservation in America (Pittstown, NJ: The Main Street Press, 1988), 56.
12. Ibid.
13. Murtagh, 36.
14. Benton MacKaye, The New Exploration (New York: Harcourt, Brace and Company, Inc., 1928), preface.
15. Ibid., 198.
16. Ibid., 195.
17. Charles B. Hosmer, Preservation Comes of Age: From Williamsburg to the National Trust, 1926-49, vol. 1 (Charlottesville, VA: University Press of Virginia, 1981), 670.
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20. Ibid.
21. U.S. Army Corps of Engineers, Philadelphia District, Feasibility Report: Schuylkill River Review (1981), 21.
22. Dyan Zaslow, These American Lands (New York: Henry Holt and Company, 1986), 291.
23. Oleson, 8.
24. U.S. Department of the Interior, National Rivers Inventory: Final List of Rivers, Pennsylvania (Philadelphia, 1981), 1.
25. Rolf Diamant, J. Glenn Eugster, and Christopher Duerksen, A Citizen's Guide to River Conservation (Washington, DC: The Conservation Foundation, 1984), 60.
26. National Rivers Inventory, 8.
27. Ibid.
28. Oleson, 31.
29. Pennsylvania, Department of Environmental Resources, Scenic Rivers pamphlet (1989).

30. President's Commission on Americans Outdoors, Americans Outdoors: The Legacy, The Challenge (Washington, DC: Island Press, 1987), 152.
31. For specific zoning related to the Schuylkill River see Eric Weyman, Zoning Analysis for the Schuylkill River, Leesport to Gibraltar Study Area, Berks County, Pennsylvania (Schuylkill River Greenway Association, 1987). For regulatory scenarios on a state level see U.S. Department of the Interior, Mid-Atlantic Region, Division of Park and Planning, River Corridor Conservation: Alternative State Government Approaches (Philadelphia, 1985).
32. Marjorie R. Corbett, Greenline Parks: Land Conservation Trends for the Eighties and Beyond (Washington, DC National Parks and Conservation Association, 1983), 13.
33. Ibid, 2.
34. Deirdre Gibson, National Park Service, Mid-Atlantic Region, lecture on cultural landscape management, December, 1989, University of Pennsylvania.
35. See Frederick Jackson Turner, The Frontier in American History [1920] (New York: Holt, Rinehart and Winston, 1962), a landmark work on the significance of the frontier in American history and the impact of the 1890 U.S. census. According to population figures, the frontier was officially closed at this time.
36. Corbett, 3.
37. U.S. Department of the Interior, National Park Service, Mid-Atlantic Region, Division of Natural Resource Planning, New Directions to Pinelands Interpretation: The Report of the Pinelands Interpretation Committee (draft) (1984), 24.
38. U.S. Department of the Interior, National Park Service, Mid-Atlantic Region, Schuylkill River Greenway Study (1984), 16.
39. Ibid, 12.
40. Pennsylvania, Department of Environmental Resources, Schuylkill River Design Guide (Harrisburg, PA, 1984), 1.
41. J. Glenn Eugster, "Transportation and Industrial Heritage," Prepared for the 43rd National Trust for Historic Preservation Conference, Philadelphia, PA, October, 1989 (U.S. Department of the Interior, National Park Service, Mid-Atlantic Office, 1989), 2.

42. Ibid, 1.

43. National Trust for Historic Preservation, A Guide to Delineating Edges of Historic Districts (Washington, DC: The Preservation Press, 1976), 64.

44. Gerald Adelmann, "Rebirth of the I&M Canal Signals Birth of 'Heritage Corridor,'" Preservation Forum 3 (Fall 1989), 11.

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46. Ibid.

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48. Pennsylvania, Department of Community Affairs, Heritage Parks: A Program Manual (1989), 2-3.

CHAPTER THREE: CULTURAL LANDSCAPE THEORY AND PRACTICE

The vocabulary and ideas from many disciplines, including policy, planning, landscape design, historic preservation, and ecology -- contribute to contemporary river corridor management. Studies for the Schuylkill River Valley's management in the last decade, for example, include a greenway proposal (policy), a zoning study (planning), and design guide (landscape design). The Pennsylvania Department of Environmental Resources' nomination of the Schuylkill to the Pennsylvania Scenic Rivers program (1979) is also a major, multi-disciplinary study. It provides numerous lists of the Schuylkill River Valley's resources including historic structures (historic preservation) and plants, fish and wildlife (ecology). To realize a well-managed historic riverscape, with protected resources, historic integrity, and potential for innovative interpretation, an integration of these disciplines' ideas must occur.

Cultural landscape theory and practice attempts to do this. It incorporates information pertaining to a landscape's historic land use with other inventories of natural, scenic and recreational resources. Cultural landscape preservation theory and practice also considers the interpretation of the landscape for its residents and visitors. This provides the basis for a management plan

that responds to the historic integrity of a site and its evolving character. The brief overview of cultural landscape theory and practice below illustrates its applicability to the Schuylkill River and other river corridors.

A cultural landscape may be defined as an ordinary, living landscape. Instead of a formal designer creating a site, many individuals shape the land. James Marston Fitch describes a cultural landscape as an accumulation of human activity upon the land which connotes networks of inter-related features and a sense of time.¹ A cultural landscape also has one or more "themes" relating people's activity to the land. In Saving America's Countryside, two examples of large-scale cultural landscapes are the Hanalei Valley in Hawaii and Oley Township, Pennsylvania.² Both have a unique set of landscape features that define their historic use. The history and origins of the preservation of this type of landscape are described in Chapter Two. Because a river valley is a type of cultural landscape, the application of cultural landscape theory to river corridors is appropriate.

Cultural landscape preservation theory responds to four basic elements of the definition of this type of landscape. First of all, the inventory, analysis and preservation planning of a cultural landscape must be done with a broad view. Because these landscapes are composed largely of

everyday, vernacular elements, care must be taken to understand what is significant to the given site.³ Second, there is a need to study and preserve the networks and relationships between features (human and/or natural) which define the area and give it historic and aesthetic richness.⁴ Third, these vernacular, intertwined features must be protected and interpreted in a landscape that has integrity and clarity.⁵ The resident and visitor, scholar and common person, must be able to "read" or interpret. Fourth, because it is an ever-evolving landscape, the cultural landscape's preservation plan must allow for change.⁶

Utilizing this theory, cultural landscapes may be studied and managed in five complementary stages: documentation, site analysis, and interview, followed by interpretation and management.

Historic documentation reveals the site's history and significance, and it gives the cultural landscape planner a context in which to work. Possible sources of images and written information about an area include guidebooks, photographs, letters and other personal accounts, local histories, and paintings and sketches.⁷ What to look for in the field, questions to ask residents and visitors, and themes to emphasize may be revealed in archival material.

Site analysis can uncover important clues about the natural and cultural history of an area. In his article

"Protecting Rural Cultural Landscapes: Finding Value in the Countryside," Robert Melnick describes components of cultural landscapes to assess when looking at the land. It is a thorough list that emphasizes land use themes, the landscape's vernacular quality, and the relationships between landscape features that were discussed above. Melnick's checklist for site analysis includes general land use, site arrangement, circulation patterns and networks, and the relationships between structures and vegetation, and between vegetation and land use. Boundary-controlling elements, building types and functions, materials and construction techniques, small-scale elements, and historic views are other types of features to review in the landscape.⁸

A 1987 National Park Service "adjacent lands study" for conserving the setting of George Washington's birthplace based its recommendations on a Melnick-type assessment. For example, the landscape's boundary demarcations of the eighteenth century landscape were determined to be shorelines, slopes, ridges, the woodland edge, witness trees and the fencing of crops.⁹ An analysis of photographic panoramas found many of the same features and relationships in the twentieth century. Open water, undeveloped shorelines, and the woodland edge enclosing fields continue to form visual and physical boundaries at the site.¹⁰

In addition to documentation and site analysis, interviews with people associated with the area help to form images or visual maps of the site. This is important for two reasons. First, others' images help to reconstruct the history of the site. Even undocumented stories of people and activities associated with the site are evocative and help to shape an historic image of the site and possible plans for its preservation. Interviews also help the planner create something meaningful for the community, as they can reveal how people perceive the site and surroundings today.¹¹ The site will be more attractive for educational, recreational and any other uses if it meets with the approval of the community.

After the information gathered from these three steps, documentation, site analysis and interviews, is synthesized, interpretation decisions must be made. Who is the audience and how best can the landscape and its messages be conveyed? The cultural landscape may be assessed using the theory and definitions given above. Does the physical environment have historic integrity? Is the design of the site historically accurate through the visual relationship of features such as spacing, circulation patterns, boundary demarcations and small-scale elements? Are the materials of the physical environment historic? Does the setting evoke an historic or aesthetic feeling for a past period of time?¹²

Historic accuracy and legibility is important so that the viewer can "read" the landscape in historic terms as well as enjoy aesthetic and recreational benefits. The cultural landscape preservationist and planner is, on the first level, interpreting the elements and their relationships of the site through restoration, recreation, or merely by emphasizing important features. Interpretation is defined as a means of fostering greater public awareness, understanding and appreciation of the nature, history, and culture of an area.¹³

On a second, broader level, interpretation steps beyond the intuitive educational level, to help the visitor "read" the landscape with aids such as site signage, brochures, maps, museums, exhibits, tours, demonstrations, and workshops. Historic and contemporary issues may be addressed as, by its definition, a cultural landscape is a living landscape that continues to form new layers.

Management of a cultural landscape must respond to the interpretative program so that the landscape is legible to the visitor. Several choices have to be made when interpreting and managing a cultural landscape. Because the landscape is evolving, the selection of only one time period of significance may be impossible. Decisions must be made as contrasting components of the landscape are weighed.

Delineating boundaries of a cultural landscape may be difficult because of the scale and type of resources. The

National Trust of Historic Preservation's guidelines for defining boundaries of historic districts are useful as the idea of a thematic, historic context is central to both. In addition to legal and political constraints, the National Trust suggests historic, visual and physical factors. Examples of edges to utilize that one could encounter and corroborate through documentation, site analysis and interviewing include original settlement lines, topographical changes, and modern intrusions like highways.¹⁴

Once the boundaries are drawn, the site itself may need "editing" to separate or harmonize modern elements (like parking or rest rooms) and the historic landscape.¹⁵ The sensitive siting of modern elements may also minimize their intrusive nature. A management plan should prioritize the needs of visitors to the site and differentiate interpreted area (natural and cultural) from recreation and service areas.

Management must also respond to the evolving nature of the cultural landscape. Caretaking and re-evaluating of the site are important in regards to the landscape's physical and educational integrity over time. A flexible management plan that allows for change should be composed for the cultural landscape.

In this study, the Schuylkill River Valley is perceived and analyzed as one integral cultural landscape, and it is

also seen as a mosaic of a great number of smaller cultural landscapes with their own themes of human activities upon the land. The theory of cultural landscape preservation and its practice, as described above, will be studied and evaluated in relation to case study sites of the Schuylkill River Valley in the following chapter.

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CHAPTER FOUR: THE APPLICATION OF CULTURAL LANDSCAPE THEORY
AND PRACTICE TO RIVER CORRIDOR MANAGEMENT --
THREE CASE STUDIES

To test the compendium of the various applications of cultural landscape theory and practice, as gathered and outlined in Chapter Three, to the Schuylkill River heritage corridor, three case studies were developed. The sites are all in southeastern Pennsylvania in the Schuylkill River Valley. They are the Hawk Mountain Sanctuary in Kempton, the Allegheny Aqueduct park in Gibraltar, and Bartram's Garden in Philadelphia. The sites' locations are indicated on figure 4. The use of the following case studies provides an opportunity to examine the manner in which the historic landscapes of riparian sites are studied and interpreted.

Three sites were chosen as representative of sites found along the Schuylkill River heritage corridor. While they each have unique features, the sites represent the river's various natural environments and cultural themes (delineated in Chapter One), and the elements of the heritage corridor definition (discussed in Chapter Two). The case studies are necessary and valuable to this thesis because there are other sites along the corridor that share similar natural resources, cultural significance and issues of interpretation. These case studies are models that may be utilized when evaluating other sites in the Schuylkill River heritage corridor.

The case study sites are located in three of the six physiographic zones of the river that were listed in Chapter One: the Appalachian Mountains of the Ridge and Valley (Hawk Mountain Sanctuary), the Triassic Lowland of the Piedmont (the Allegheny Aqueduct park), and the Delaware Estuary of the Coastal Plain (Bartram's Garden).¹ Each of these regions has a unique natural environment in terms of geology, river form, soils, vegetation and wildlife. These natural features underpin the historic or cultural land use of the regions. The Schuylkill River heritage corridor themes -- fishing, agriculture, lumber, textiles, iron, coal, machine and foundry, transportation, and house sites and recreation-- reflect the types of historic land use along the river. The natural resources and cultural themes of the three case studies, discussed below, are unique to those sites, but also are representative of other sites in the Schuylkill River heritage corridor.

I. Hawk Mountain Sanctuary is in the Appalachian Mountains, the headwaters of the Schuylkill River. The site's northwest boundary reaches the Little Schuylkill River which is the eastern one of the two main branches of the Schuylkill which meet near Port Clinton. (see figure 5) From the most frequented spot in the sanctuary, the North Overlook, the Little Schuylkill is visible. (plates 1 and 2)

The large (2200 acre) site is heavily forested and has a large, diverse wildlife population, typical of this physiographic zone. Birds of prey migrate along the Kittatinny Ridge each fall. Professional and amateur birders and conservationists may sight these birds from the outlooks in the sanctuary. Before the sanctuary's founding, hunters stood on the same rock promontories.

II. The Allegheny Aqueduct park is in the Triassic Lowland. The land is low and rolling, and the Schuylkill is wide and shallow with small islands and sand bars. In the nineteenth century, because of the shallowness and changing flow patterns of the river, the Schuylkill Navigation Company constructed a lock canal in this region. The aqueduct, which spans a tributary one thousand feet upstream from the Schuylkill, is one of many significant artifacts remaining from the canal. (plate 3)

III. The third site to be discussed is Bartram's Garden, a historic farm site along the tidal estuary of the Schuylkill, just downstream from William Penn's historic grid of Philadelphia. (Note Bartram's house on the 1752 Scull and Heap map of Philadelphia, figure 6). The proximity to both hinterland and navigable water encouraged early development in and near Philadelphia. Bartram, like others, was also attracted to the Schuylkill's marshlands for farming.

The sites presented above, individually and collectively, will be found to meet the criteria of a heritage corridor as described in Chapter Two. The case studies chosen exhibit natural, cultural, recreational and economic resources linked physically and thematically to the Schuylkill River. These various resources should be studied and managed with conservation, education and recreation for residents and visitors as primary goals.

Hawk Mountain, a wildlife sanctuary, is a significant natural and recreational area for birding and hiking. The Sanctuary interprets its significant role in the American conservation movement as well as its historic associations with local industry and recreation.

The Allegheny Aqueduct park will soon be under county park management, with boating and fishing opportunities. It is an important monument to the Schuylkill River's canal and slackwater system that stretched 108 miles, from Philadelphia to the Blue Mountains.

Bartram's Garden has passive and active recreational areas. Important botanic material and cultural/historical themes associated with the site's significant eighteenth century farmer/botanists, John and William Bartram, characterize the site.

By its definition, a heritage corridor should protect and enhance landmarks, landscapes and activities that are

important to local communities. The management of the corridor's resources should also stimulate economic activity through tourism and recreation.² The corridor's promotion of open space, public accessibility to the river, and the protection of the watershed, add to the aspects mentioned above and improve the quality of life for the population in these areas.

The three-part categorization for review of the case study sites will follow the pattern established in the description of the theory and practice of cultural landscape management in Chapter Three. The three categories are: "Site Description and Significance," "Review of Site Management," and "Suggestions." Under "Site Description and Significance," the three methods of cultural landscape study -- documentation, site analysis and interview, are combined. Under the rubric of "Review of Site Management," the evaluation of the site's interpretation and management will be found. Case study sites with existing management plans were chosen purposely to concentrate and focus this investigation on the role of landscape preservation in the Schuylkill River's heritage corridor management and to direct emphasis away from the design sphere. The third section of each of the following case studies provides the opportunity to evaluate the site as an individual "bead" and as a part of the river corridor. Questions discussed in

Chapter Three related to the historic integrity of the site and its interpretation are reviewed as regards to the three case studies, under "Suggestions." The quality and the amount of information relayed in each of these sections is related to the size of the site, its leadership and funding, the history of its management, and the survival of related archival or historic materials. Thus, the consequent variation in treatment of the case studies is characteristic of heritage corridor sites along the Schuylkill River or any other river.

HAWK MOUNTAIN SANCTUARY

REVIEW OF SITE AND SIGNIFICANCE

Hawk Mountain Sanctuary's importance to the Schuylkill River heritage corridor lies with its natural resources. Cultural themes of recreation, transportation, lumber and textiles form a second tier of emphasis. The sanctuary is in the Appalachian Mountains, the headwaters of the Schuylkill River. In 1965, Hawk Mountain Sanctuary was designated as a National Natural Landmark, and the 1979 Pennsylvania scenic river evaluation for the Schuylkill notes the site's natural resources and recreational opportunities.

Related to the sanctuary's natural resources is its prominent position in American conservation history. Hawk Mountain Sanctuary was the first sanctuary for birds of prey in America. Founded by Rosalie Edge in 1934, the sanctuary and its association led to both the abolishment of bird slaughter in the area and public education about birds of prey. The Hawk Mountain Sanctuary Association pressed for the passage of protective legislation for birds and continues to serve as a model of conservation and environmental education in North America.

The Sanctuary's siting was determined by the topography of the area. Hawk Mountain is located on the eastern-most

ridge of the Appalachians, part of the Blue Mountains or Kittatinny Ridge. "Kittatinny" is from the Lenni Lenape Indian word "Keekachtatenin" meaning endless³, and from the top of the ridge, the mountains do seem to run on forever. (plates 4 and 5) However, at Hawk Mountain, the long northeast-southwest ridgeline deviates, zig-zagging to the east, before resuming its course. Migrating hawks, eagles and ospreys fly south along the "endless" ridge each fall, enjoying updrafts that allow for almost effortless flying.

In Silent Spring, Rachel Carson describes the mountain and the hawks' flight:

Hawk Mountain is a picturesque mountaintop in southeastern Pennsylvania, where the easternmost ridges of the Appalachians form a last barrier to the westerly winds before dropping away toward the coastal plain. Winds striking the mountains are deflected upward so that on many autumn days there is a continuous updraft on which the broad-winged hawks and eagles ride without effort, covering many miles of their southward migration in a day. At Hawk Mountain the ridges converge and so do the aerial highways. The result is that from a widespread territory to the north birds pass through this traffic bottleneck.⁴

Hawk Mountain serves as a focal point (historically for gunners and today for birders) because the birds' flight narrows into a bottleneck at the cross-ridge, and the mountain's quartzite promontories afford good look-outs. Hawk Mountain is an exemplary viewing site for the observation of the annual flyway of these birds. The site is not a protective habitat for resident species as is often

assumed by the public. Forming the sanctuary initially curtailed the hunting from this "easy-shot" spot and, over time, provided recreational and educational opportunities for the general public and researchers.

Rosalie Edge, the activist behind the Sanctuary's formation and continued success, is considered to be the first woman to have considerable impact on the conservation movement.⁵ A suffragette and avid amateur ornithologist living in New York City, Edge began her conservation career at age fifty-two after reading "A Crisis in Conservation" in 1929. The pamphlet listed endangered birds and faulted the Audubon Society for their narrow conservation ethic, protecting only songbirds and siding with gamesmen.⁶

Edge formed the Emergency Conservation Committee (ECC) in 1930 to raise consciousness and educate the public on several environmental issues. Even on their stationary of the 1930s, the ECC actively campaigned for the protection of virgin forests, birds of prey, bald eagles, fish-eating birds, waterfowl, elk, Alaska brown bear, fur-bearing animals and antelope. Issues they were opposed to included the drainage of swamps, controlling natural predators through poisoning, bounties and other methods, the introduction of foreign species, and the construction of public highways through forest areas.⁷ Finding alliance with powerful preservationists of the 1930s such as John

Muir and Secretary of the Interior Harold Ickes, Edge and the ECC were successful in promoting the creation of Olympic National Park in Washington and the addition of a sugar pine grove in Yosemite National Park.⁸ According to her son and biographer Peter, however, she was perhaps best-known for founding and managing the Hawk Mountain Sanctuary.⁹

Responding to an article in the Annual Report of the Hawk and Owl Society in 1933 describing the bird slaughter on the mountain, Edge purchased the land and hired Maurice Broun as its first curator. At this time, Pennsylvania legislation did not protect birds of prey, and there was, in fact, a five dollar bounty on goshawks. People considered hawks vermin that killed farm stock and game birds. Shooting them was a sport; dead birds were rarely collected and many wounded birds were left to die.¹⁰

Broun ran the physical sanctuary for thirty-two years. He was the one who "pontificated on hawks atop the mountain, who wrote the scientific papers, and who was loved by the visitors."¹¹ Edge met him in 1932 when he hand-delivered a five dollar contribution to the ECC. A life-long advocate of improving the image and conserving birds of prey, Broun generated interest and understanding of the Sanctuary's conservation philosophy.

Other themes such as "work" and "transport" are tied to Hawk Mountain and its bird conservation effort. At a

secondary level of significance, themes of work and transport typify those delineated in the general history and significance of the Schuylkill River Valley in Chapter One.

The house that the Brouns lived in for many years is on the north side of the Mountain Road (now Route 895) just east of the present entrance to the Sanctuary. The road and the house are significant places in the history of the mountain as emblems of transportation-related cultural activities. The road was first an Indian path, transversing the cross-ridge. Later, it was an important passage between the agricultural region of the Great Valley to the east and the coal region to the north. The house had served as a tavern for travelers and traders. According to D. B. Brunner, in The Indians of Berks County, the houses' first owner Jacob Gephardt was the victim of an Indian raid in the eighteenth century.¹¹ The next owner, Matthias Schambacher became notorious. Legend holds Schambacher, after intoxicating his guests, axed them to death, and then hauled their baggage to Port Clinton. There his brother-in-law, a lock-tender, put the loot in a canal boat and sent it downstream to be sold in Philadelphia.¹³

Charles Adams chronicles ghosts of this region in his book Ghost Stories of Berks County, Pennsylvania. He discovered a collection of stories pertaining to specters of the "ecke," some concerning the Schambacher character.

"Ecke," Pennsylvania Dutch for "corner" describes this area tucked in the southern portion of the zigzag.¹⁴ Broun believed that at least some of the ghosts were noisy wood rats, some of which lived in the Schambacher's tavern.¹⁵ The tavern was later a gathering spot for hunters. The road made birding accessible, especially after cars became common. The structure, called "Schaumbach's," is noted on the Sanctuary's primary map (figure 7). Visitors may view the house from the Mountain Road (plate 6) and from the South Lookout (plate 7).

Lumber is another Schuylkill River heritage corridor theme demonstrated by this site. The mountain was timbered for charcoal beginning in the eighteenth century. The charcoal was used at nearby Windsor Furnace which, in turn, served as a forge, sawmill and gristmill.¹⁶ When coal replaced wood in furnaces, timber was logged from the mountain for building purposes. Following a devastating chestnut blight in the 1920s, red oak was harvested for shoring timbers in deep-shaft mines.¹⁷ At the same time, the ridge-top was intermittently burned to encourage blueberry growth.¹⁸

Other local industry products such as sandstone were found at Hawk Mountain. Charcoal was used by a blacksmith for a quarrying operation on the mountain that peaked in activity at the turn of the twentieth century. Sandstone

was loaded onto a narrow gauge, gravity railroad on the northwestern face of the mountain, and dumped into a breaker house at the bottom near the railroad paralleling the Little Schuylkill. After being crushed and screened, the sand was transported by rail to glass manufacturing plants south of the ridge.

Lastly, the original inhabitants of Hawk Mountain are very important to its cultural history and the history of the Schuylkill River Valley. The Lenni Lenape Indians lived and hunted in small groups on either side of Hawk Mountain. Although new settlers and the Indians existed peacefully for most of the eighteenth century, the British did erect small forts along the Kittatinny Ridge between the Susquehanna and Delaware Rivers for protection from the Indians. There was a colonial fort at Port Clinton, southeast of Hawk Mountain, on the Schuylkill.¹⁹ According to Hawk Mountain curator Jim Brett, by the early nineteenth century, European settlers had pushed the last of the Indians out of the region, to the west.²⁰ Areas along Pine Creek and the Little Schuylkill are significant archeological sites.²¹

REVIEW OF SITE MANAGEMENT

Hawk Mountain Sanctuary is a carefully managed and intellectually stimulating landscape. Its success seems to stem from three points. First, the site is large. Its caretakers are monitoring and managing a whole environment, and its many natural and cultural systems are intact. Second, because the Sanctuary is oriented toward natural systems such as seasons of the year, annual migration, and even the geologic formation of mountains, there is an awareness of time and the networks of human and natural activity. Third, credit must be given to the inspirational leaders, Rosalie Edge and Maurice Broun, and the followers like curator James Brett who still shape and implement the management plan. The Association was incorporated "to establish and maintain preserves for the conservation and protection of wildlife."²² Broun stresses that all wildlife is protected in the Sanctuary's Second Annual Report.²³ Similarly, the top objectives of the 1990 management plan are to educate the public, conduct research, and contribute to public policy about birds of prey and other wildlife and the environment.²⁴

Layers of cultural history related to the land are considered in Hawk Mountain literature, educational

programs, and on the trails. The fourth target of the 1990 Action Agenda is to maintain the Sanctuary's natural and historical character consistent with the mission of the Association.²⁵ Although the primary focus of the organization is bird conservation and the environment, people associated with the area are considered such as the Lenni Lenape Indians, traders and travelers of the eighteenth and nineteenth century, and hunters and conservationists to the present day.

On the trails, several cultural landscape themes related to man's work are interpreted. Evidence of the sandstone quarrying mentioned above is the foundation of a structure for the railroad's brake and cable drum. (plate 8) The stone foundation is approximately fifteen feet across and six feet high. "The Slide" or railway and "the Hall of the Mountain King," the collecting and loading area for the sandstone, are interpreted by signage (plates 9 and 10). The modern path to the look-outs overlays the historic route of the sand-hauling which also adds to the integrity of this historic feature. The railroad along the Little Schuylkill, which carried the sand to Dreherstown, is also visible. (plate 2) A Hawk Mountain News article by Jim Brett on "The Slide" describes how the area was denuded of vegetation by the quarrying operation. "The lack of any significant tree growth, the level ground, and the clear line of a sight down

the ridge made it an ideal spot to shoot hawks . . . "26

Signage at this spot, now the Sunset Overlook off the Scenic Lookout Trail, tells another story of human activity on the mountain. The text and the 1932 photographs by Richard Pough of slain hawks describe the early twentieth century slaughter of birds of prey. The lookout serves as a memorial to past behavior and as a warning to encourage conservation efforts.

In addition to recreation (hunting), transportation and textiles themes, the lumber theme is also referred to in literature and maps. Charcoal burns, for example, are noted on the primary map that is posted throughout the Sanctuary. (see figure 7)

SUGGESTIONS

When the significance of the site and its management are considered with the heritage corridor in mind, three ideas emerge: Hawk Mountain Sanctuary is protecting and promoting its natural resources, there is less of a cultural emphasis here than at other river sites, and the link to the river is relatively weak.

Site analysis, discussion with the staff and review of the Association's current management plan shows that it is involved with preservation of its important natural resources and encourages the continuation and expansion of public education and research on the environment. The Association encourages amateur and professional naturalists and scientists to consider environmental concerns broadly which promotes to the heritage corridor concept. On one level, visitors are reminded of natural features that Hawk Mountain shares with other sites. In the Association's self-guided geology tour, for example, the periglacial "river of rocks" (plate 11) is explained, and similar boulder fields at Blue Rocks in Lenhartsville and the Hickory Run Boulder Field in Hickory Run State Park near White Haven are suggested as other examples to see.²⁷ There is also a policy interest related to other landscapes.

According to the 1990 Action Agenda, the Association has conservation efforts aimed at protecting nearby lands such as the Pinnacle. Bird research is also conducted on an international level. This broad thinking, in addition to a well-managed site, is a good model for other corridor sites.

While cultural artifacts take second priority at Hawk Mountain, their current interpretation may complement that of other sites in the Schuylkill River heritage corridor. Cultural history links, perhaps with respect to Indian activities, the quarrying operation, lumber, travel and transportation, are possible additions to interpretation at Hawk Mountain. For example, the Windsor Furnace was fired with timber from Hawk Mountain. The furnace is intact, approximately fifteen miles south of the mountain in Windsor Castle.²⁸ The furnace site, which is on land owned by the Pennsylvania Game Commission, is a potential link for Hawk Mountain's cultural history interpretation.

The Little Schuylkill's natural and cultural interpretation must be expanded when considering Hawk Mountain Sanctuary as a bead on the Schuylkill River heritage corridor. The river's role related to the main stem of the Schuylkill and its path through the Appalachians should be revealed in general literature and signage. Its cultural connection to early technology and industry on the site and in the region could also be emphasized.

Conservation efforts related to the stream's acid mine drainage, coal culm and acid rain problems could also be related to other conservation efforts on the Schuylkill, as a cultural theme.

Archeology is also an important Schuylkill River heritage corridor theme demonstrated by this case study. Hawk Mountain and its surrounding area warrants archeological investigation because of its association with Indian and colonial activity. Historical literature such as D.B. Brunner's accounts of Indians along the Schuylkill and current inventories of archeological sites (one is available, for example, in the 1979 Schuylkill River Study) may be combined for a feasibility study of potential sites. In addition to the actual investigation, interpretation of methods and findings should be a component of the Schuylkill River heritage corridor at Hawk Mountain.

Hikes along the river²⁹ or rides on the nearby railroad are possible activities to promote the relationship between natural and cultural resources. The W.K. & S. calls itself the "Hawk Mountain Line" because of its proximity to the Sanctuary. It operates over a portion of the former Reading Company Schuylkill and Lehigh branch that originally opened in 1874 as the Berks County Railroad. Visitors ride in heavyweight passenger cars from the Lackawanna and Reading Railroad and take in the "charm and romance of

authentic short-line railroading" according to a current W.K. & S. brochure.

Another area to consider to strengthen the Hawk Mountain Sanctuary's link with the heritage corridor is its proximity to other trails that celebrate the Schuylkill corridor's natural and cultural features. The Appalachian Trail is easily accessible from Hawk Mountain trails. The trail is shown on the Sanctuary's map that is posted at the site and is available for purchase. (see figure 7) Supporters of the Appalachian Trail speak of the Trail's cultural heritage as well as natural and scenic attributes which is important to the heritage corridor concept.

In its 2,100 miles the Appalachian Trail passes near a multitude of prehistoric, historic and archeologically significant areas which are as much a part of the Trail's richness and diversity as are its scenic features. The quality of the trail experience depends on the preservation of this varied environment, both natural and cultural.³⁰

The Schuylkill Canal Towpath Trail, which begins in Port Clinton near the Blue Mountain gap, is also nearby and connects with the Appalachian Trail. A "historic nature foot trail," it highlights remnants of the Schuylkill Navigation Company's canal system. The sign at the head of the trail in Port Clinton appears in plate 12.

ALLEGHENY AQUEDUCT

REVIEW OF SITE AND SIGNIFICANCE

The primary Schuylkill River heritage corridor themes of the Allegheny Aqueduct Park are transportation, with secondary emphases on agriculture, textiles, and recreation. The site primarily celebrates cultural and recreational resources. Renovated in 1989, the aqueduct will form the centerpiece of a county park that is in its final planning stages. The project began formally in 1983 under the direction of the Schuylkill River Greenway Association. The aqueduct's scale and workmanship, combined with its accessibility and good condition, make it a powerful symbol to preserve and to relate to the canal, the Schuylkill River and other local cultural landscape features. The structure is commonly called the Gibraltar Aqueduct, as it is located in the town of Gibraltar, Robeson Township, northwest of the junction of Routes 724 and 568 (see figure 8).

The Allegheny Aqueduct is an important monument of river-related industrial heritage. Documentation shows that the aqueduct, built in 1824 to span the Allegheny Creek, is an architectural artifact from the Schuylkill Navigation Company's canal system which ran from Port Carbon to Philadelphia. (See pages 17 and 18 in Chapter One for an

overview of the history and significance of the Schuylkill Navigation Company).

The aqueduct was a feature of the Girard Canal, a twenty-two mile segment of the Schuylkill Navigation Company's 108 mile system. It was utilized by the Company from 1824 to 1919.³¹ The Girard Canal extended from south of Reading at Poplar Neck to the Girard Outlet just north of Spring City (figure 9) and was named for its major financier, Stephen Girard. Typical of this region, the Triassic Lowland, the Schuylkill River was generally slow and shallow with some shoals and rapids, which is why a lock canal was built in this section. In addition to forming the canal bed and building innovative locks and bridges, the engineers of the canal designed aqueducts and culverts to cross the Schuylkill River's tributaries.

This aqueduct was built to carry canal boats across the Allegheny Creek. The use of Melnick's checklist for site analysis (see page 51 in Chapter Three) leads to the examination of workmanship and materials, circulation patterns and the relationships between elements at the site. The aqueduct is approximately two hundred feet long and seventy feet wide with five arches resting on pylons. (see plate 3) The towpath, located on the downstream side, is six feet wide. (plate 13) According to Richard Miller, the stone mason who restored the aqueduct in 1989, the path's

original material was tightly packed gravel and clay which would have offered secure footing to men and mules, even in wet conditions.³²

The waterway of the canal has battered walls. It is twenty-nine feet wide at the top and narrows to twenty-four feet wide at the bottom. Originally clay, the bed was lined with concrete in the twentieth century.³³ The waterway had wood bumpers to keep the canal boats from hitting the sides. (See plate 13 for new bumpers).

In addition to evoking images and information pertaining to canal travel, the aqueduct is a study in masonry work. The materials of the structure, brownstone and limestone, are native to the area and were probably quarried in the mountains to the south.³⁴ The stonework varies on the two main faces. Upstream, the facade is cut and dressed brownstone. (plate 14) On the downstream side, there are large blocks of uncut limestone laid up in a random, ashlar pattern on the towpath wall. (plate 15) Repair work is also in evidence on the aqueduct. Sources note repair work on the aqueduct in 1827 and 1828 as well as a major project in the 1870s.³⁵ Arches were rebuilt and capstones were replaced in the most recent restoration. (plate 16)

In the 1930s, when all commercial trade had stopped on the canal, it was leased to the Birdsboro Steel Company.

The company is a steel and armament factory and is located four miles downstream; the canal formed their water supply system until after World War II.³⁶ Interviews reveal that people in the area associate the park site with related recreational activities, targeting the years after commercial activity dropped off and before the Pennsylvania Highway Department drained the canal when building the current Route 724. These recreational activities, another Schuylkill River heritage corridor theme, included skating on the canal, fishing and swimming in the millpond and the canal, and boating in the river (after launching from this site).

Features in and around the proposed aqueduct park site may expand and add to its interpretation. SRGA has acquired approximately fifteen acres, adjacent to the structure, which they plan to donate, as previously mentioned, to the Berks County commissioners for use as a public park. The track is composed of ribbons of land along the Schuylkill River, the Allegheny Creek, and the canal bed, as well as a large section south of Route 724. This lower section extends to the Pennsylvania Railroad tracks. (figure 10)

Dense networks of circulation and transportation exist in this small landscape. River, creek and mill race as well as footpaths, canal, trolley path, old and new roads, and railroad are all represented physically and in local lore.

(figure 11) The Allegheny Creek enters the Schuylkill River one thousand feet downstream from the aqueduct. Related to the theme of transportation and circulation are themes of agriculture and textiles tied to a nearby mill. Beidler's Mill (plate 17) and its millhouse (plate 18) are located on the creek at the northwestern edge of the site. The mill was built before 1800 and used initially as a grist mill, powered by an undershot wheel. Subsequently, the building was utilized as a butcher shop and a hosiery mill.³⁷ Today it is a roofless shell.

A pond on the south side of Route 724 fed the mill through a mill race that ran along the west side of the current site. When the canal was built, the race was directed into a stone channel about one hundred feet west of the aqueduct. In later years, sluice and waste gates were added to the race so that water from the Allegheny Creek could by-pass or be fed into the canal to maintain water levels.³⁸

Old River Road, the original road of the area, followed the curves of the creek and the river. When the canal was built, a bridge called Thompson's Road Bridge, was erected to cross the canal just east of the aqueduct. It was demolished when the current Route 724 was built.³⁹

A trolley line ran where Route 724 is today. Its first run through Gibraltar was in 1904, and there was a

stop at the building that is directly east of the aqueduct, across Old River Road.⁴¹ According to a story heard by Lorah Hopkins, a Berks County resident and assistant director of SRGA, a favorite winter activity of Gibraltar children early in this century was riding the trolley one way and skating home on the canal.⁴²

Historically, Reading and Pennsylvania Railroads ran lines along the southern boundary of the site. Today, the Pennsylvania Railroad tracks have been pulled up in this section, and the Reading line has a limited, freight-carrying schedule.⁴³ Plate 19 shows the remaining line and the path where the Pennsylvania Railroad tracks were.

REVIEW OF SITE MANAGEMENT

The aqueduct park was the subject of a meeting sponsored by the Schuylkill River Greenway Association (SRGA) on February 24, 1990. Many leaders of the project -- Lorah Hopkins of SRGA, canal historian George Meiser IX, planner Robert Bartmann, stone mason Richard Miller, and lawyer Samuel Russell, spoke of their involvement and were optimistic about the imminent formation of the park. Short term goals for the park involve political pressure and physical rehabilitation. Long term goals include the final design phase and physical creation of the park.

According to the aqueduct's restorer, his job is ninety-eight percent complete as of February, 1990, and only grading and seeding remain. In the political arena, the SRGA will continue to work with Berks County Parks and Recreation Director Bill Semmel to speed the transfer of title from SRGA to Berks County and the formation of the park.

The final design for the park must depart from the original (see figure 12) because the final parcels of land that SRGA acquired were different than what appears in this plan. The county's alterations to the site, notably the introduction of a sewer line through the site and sewer

treatment plant northwest of the aqueduct, also necessitate a revised plan.

The aqueduct is the centerpiece of the site, the important cultural resource, and is being treated as such. As mentioned earlier, it physically dominates the landscape. The structure is unique in its good condition and siting in a largely undisturbed, undeveloped context. It has been stabilized and restored with sensitivity to historic materials and masonry work (pointing and dressing). The towpath is accessible, and the waterway has three feet of water in it. The metal railing on the towpath is utilitarian but not historically accurate. Plate 20 shows a 1899 photograph of the canal with a wooden railing. While it would be historically accurate to leave the area along the canal largely denuded, the plan calls for trees to make the site more popular and comfortable.

Bartmann, SRGA staff and members, and other meeting-goers, are eager to restore another water circulation system, the pond and mill race, if possible. The mill race may provide a means of watering the canal as it did historically. This would serve a utilitarian interest and recreate a historic waterway, symbolic of the dense circulation systems that once appeared prominently on the site.

A feature that contributes to the overall legibility of the site, the mill, is not owned by SRGA. Contacting the owners and drawing their attention and cooperation to the project is a park management goal according to Lorah Hopkins.⁴⁴

Another plan for improving the historic integrity of the site, not shown on the original park plan, is to restore more of the canal bed to the west. The existing form of the canal is illustrated in plate 21. SRGA owns the bed for approximately one-quarter mile toward the village of Seifert. Extension of the form, if not full-scale restoration and re-watering, would add to the historic and aesthetic experience of the park.

Another extension of a transportation system that SRGA is planning is the acquisition of the Pennsylvania Railroad right-of-way. In their minds, this five-mile segment would increase recreation opportunities and add another link in the greenway chain. Adding a railroad line to the park also offers an opportunity to interpret the river-related transportation theme more fully.

Bartmann recognizes another, innovative link more closely oriented to the Schuylkill River. He sees a potential tie for the park to the historic town of Seifert. He notes the Naomi Hotel (plate 22) and the town's historic boat-building industry as possible features to connect to

the aqueduct park. Plate 23 shows a row of houses in Seifert, just east of the hotel, which face the canal bed (right side of photograph).

Although the playground/picnic area where the sewage treatment plant now stands will not be realized, the park's plan does emphasize recreational opportunities. A boat launch on the Schuylkill and open space for passive recreation are included.

SUGGESTIONS

While it is difficult to conjecture how the final plan for the park will evolve, some suggestions related to the theory and practice of cultural landscape preservation follow. The separation of modern land use from historic setting, a corridor theme of systems, and landscape restoration are issues raised by this case study.

At this small site, there are pressures for modern land uses such as parking and recreation as well as the desire for historic integrity. Documentation, site analysis and interviews show that the area between the canal and the mill is the most historically significant and should be treated with the most historic accuracy. The areas south of Route 724 and along the river may be utilized to promote accessibility to the Schuylkill and for recreation.

The aqueduct's sensitive restoration and prominent position in the park plan are important to celebrating the major heritage corridor theme of the site. Restoring the canal bed to the west would help visitors form an historic image of the site. A sign at the canal with a historic picture of the site would be appropriate. The sign should include three points relating to the historic context of the site: a brief description of the canal system with dates,

location and cargo information; a brief description of the immediate site, boat, towpath, vegetation; and other canal features to look for in the area. Stuart Wells's inventory of Girard Canal features (1989) describes the history and current condition of locks, dams, aqueducts, culverts, lockhouses and other structures on this section of the Schuylkill Navigation system. The Allegheny Aqueduct's closest architectural artifacts are Beidler's Road Bridge abutments to the west and Seidel's Aqueduct to the east.⁴⁵

The final plan for the park must also encourage a feeling of accessibility so people will approach the artifact and walk along the towpath. Presently, the configuration of the railing, the lack of a route across the west end, and the steep north slope do not allow easy access. Bed restoration, signage and circulation improvements will help to promote the canal as an important linear system of the Schuylkill River heritage corridor.

Recreational improvements related to the heritage corridor idea include a boat launch and a hiking trail by the river. The acquisition of the railroad right-of-way would also provide another linear link in the corridor chain. At this site, cultural and recreational resources may be successfully managed and would contribute greatly to the Schuylkill River corridor.

Transportation in the Schuylkill River Valley is related to people and goods; circulation or movement is a complex, central element of the heritage corridor. Bartmann's plans for circulation restoration will also benefit the site's historic legibility. The mill race's path, reconstructed as a footpath north of the canal, would be a unique feature that would add historic accuracy and interest to the site. A sign by the mill with a historic photo, short history and description of its relationship to the systems (mill race and creek) would contribute to the park's cultural landscape.

The Schuylkill River heritage corridor's artifice themes of agriculture, lumber and iron may also be expressed at this site. Beidler's Mill, and other historic sites such as the Joanna Furnace, the Gibraltar Iron Works and Seyfert's Iron Works represent the many early industrial sites in the Schuylkill River Valley.⁴⁶

Restoration of plant material in a vernacular landscape is another issue raised by this case study. Landscaping plans should use natives of the Triassic Lowland to create a healthy and historically accurate site. Historic photographs of the site may reveal species and positioning of some plantings that could be recreated.

BARTRAM'S GARDEN

REVIEW OF SITE AND SIGNIFICANCE

Bartram's Garden's primary Schuylkill River themes are "agriculture" as well as featuring the cultural themes of "house site" and "recreation." The site's important cultural, natural and recreational resources contribute to the heritage corridor. Bartram's Garden is a museum located in West Philadelphia (54th Street and Lindberg Blvd.) that is affiliated with Fairmount Park and administered by the John Bartram Association. The site is adjacent to the Schuylkill River and consists of a house, outbuildings, gardens and other landscape features. It is considered the oldest surviving botanic garden in North America and is a National Historic Landmark. South of the historic core of the Bartram house site are active recreation areas. The Association recently acquired a former concrete company lot north of the house which has been cleared and planted with wildflowers. The total acreage of the site is forty-four acres.

Bartram's Garden is significant for its association with its first owners, John Bartram, and his son, William Bartram. John Bartram established a house and farm site here in 1728 because the site was proximate to the core of Philadelphia and transportation. The site's riverine

marshland was also desired by farmers like Bartram. According to a study done by the University Museum of the University of Pennsylvania in 1975, patents, deeds and tax assessments indicate that meadows in Bartram's area (Kingsessing) were highly valued in the seventeenth and eighteenth centuries. Tax records of the late eighteenth century shows that small parcels of reclaimed marsh were taxed three or four times the rate per acre of uplands.⁴⁷ Lowlands did not require clearing to produce a crop of hay. According to Peter Kalm, botanist and visitor to Bartram's property, lowlands also did not deplete as quickly as uplands.⁴⁸ An early nineteenth century description of the Bartram site mentions its riparian setting and "rich meadows":

. . . River Schuylkill; from the banks of which a fine prospect of that river and of the rich meadows up and down both sides. The Delaware is also seen in the distance . . .⁴⁹

The "Draught of John Bartram's House and Garden as it appears from the River, 1758"⁵⁰ also places the house in the context of the Schuylkill (see figure 13) and describes the river as 400 yard wide.⁵¹ The size of the farm varied through the years. The largest sustained size was just over 287 acres.⁵² Figure 14 shows the approximate historic boundaries superimposed over the current urban fabric.

In addition to agrarian pursuits, Bartram's farm served as a laboratory for botanical experimentation and as a holding station for plant material. The basic lay-out of the upper garden follows the plan that John Bartram sent Peter Collinson in 1758. (figure 13) Historically, "the new flower garden" is where John Bartram planted new flowers that people sent him. Number Two on the plan, "the common flower garden," was for flowers from which Bartram selected seeds or divisions to share with others. Vegetables and herbs that were used in the house were grown in "the upper kitchen garden."

Currently, the common flower garden is planted and maintained by the Garden Club Federation of Pennsylvania and is the focus of the planting on the east side of the house. Two mature specimen trees, a Yellow Wood in the upper kitchen garden and a Black Maple in the new flower garden, have discouraged planting in these areas. In 1987, however, rectangular kitchen plots were restored with heirloom seeds from Cornell University. The lower kitchen garden, also utilized for foodstuffs for the house historically, is filled with trees. Figure 15 gives information about the current lay-out of the gardens.

The double allee of trees on the north side of the plan were rows planted by Bartram. (see figure 13) They were varied species and extended from below the gardens by the

house to the river. The allee is still intact, but it is missing trees. (plates 24 and 25)

Little is known about the area by the river. According to Paul Meyer, the Schuylkill's edge would have been an important habitat for Bartram. Here he would have planted species collected from acidic wetlands and river bottoms.⁵³ An early eighteenth century cider mill is the current highlight on the riverfront trail which is overgrown and lined with invasive plants. (plates 26 and 27)

The 1758 drawing also shows a "pond or springhead" with a "convauid [pipe] underground to a spring or milkhouse." The Reverend Manassah Cutler noted this "artificial pond" with its "good collection of aquatic plants."⁵⁴ The pond is in evidence. Archeological work may reveal the original spring and the springhouse.

John Bartram was a leader in generating awareness of American native plants in the eighteenth century. The American landscape was still relatively new to American settlers and Europeans, and Americans and Europeans were fascinated by new horticultural discoveries. Bartram was a self-taught botanist and experimented with native and exotic plants, as well as planting techniques in his garden. Archival material suggests that among the numerous important visitors to his garden such historical personages as Thomas Jefferson, Robert Morris, Benjamin Franklin, George

Washington, James Logan, John Custis and Reverend Manassah Cutler were included.

Bartram also acted as an agent and shipped live plants and seeds to England and other European countries. His longest and best-documented correspondence is with English Quaker Peter Collinson. Their exchange lasted for over thirty-eight years. Collinson suggested to King George that Bartram be named "Royal Botanist," and Bartram held the title and received a stipend from 1765 to the beginning of the American Revolution.

Eminent botanists such as Linnaeus, Gronovius and Dillenius as well as Peter Kalm, Queen Ulrica of Sweden, Sir Hans Sloane and Dr. John Fothergill corresponded with Bartram.⁵⁵ Philip Miller also received shipments from Bartram. Miller's The Gardener's Dictionary (published first in 1735, with several later, revised additions) was widely used in Europe and America as a reference work in colonial colleges and gentlemen's estates. The majority of the American plants that Miller described were ones that he learned about through Bartram. During Bartram's active years, the number of species from the eastern United States and Canada which were cultivated in Europe doubled. While a large number of these introductions are credited to Collinson and Miller, Bartram was their probable source.⁵⁶

Bartram and his son, William, also encouraged plant exploration, and the two Bartrams traveled extensively. Their trips took them up the Schuylkill River and to Florida, the Carolinas, New York State and other regions of Pennsylvania. The accounts of these travels are not only of botanical interest but are important works in America's early literature. In 1977, a Federal and state task force was formed to study the feasibility of a William Bartram National Scenic Trail to honor Bartram's 2400 mile expedition (1773-77) in southeastern North America. His pioneering role in the study of natural history and his international influence in the field of literature were cited in the proposal for this trail.⁵⁷

After John Bartram's death in 1776, William Bartram and his brother John Bartram, Jr. ran the site as a commercial nursery. The ownership of the property remained with the Bartram family until mid-century when it was sold to a wealthy railroad industrialist, Andrew Eastwick. Eastwick, as not to disturb the original, historic site, built his villa in an adjacent field (south of the house site) and had his gardener, Thomas Meehan, document the gardens.⁵⁸ The site has a recreational theme related to this era for Eastwick developed the grounds into a public refreshment park.

SUMMER RETREAT. Bartram's Botanic Garden near Gray's Ferry has been handsomely arranged and fitted up as a place of REFRESHMENT. Ice creams of the very best quality. Cakes of all kinds and all fruits in season together with every variety of temperance drink, will always be served up in handsome style. The Public are respectfully invited to call at this favorite old Garden where one of the finest collection of PLANTS is to be seen. (Philadelphia Public Ledger, July 1, 1845)⁵⁹

Other significant recreational landscapes existed along the Schuylkill near Bartram's Garden. According to Lewis, the first public park in Philadelphia was at Gray's Ferry. It was laid out like a London public garden and opened soon after the Revolution.⁶⁰ The Schuylkill Fishing Company was located across the river from Bartram's at Rambo's Rocks. The club's members enjoyed fishing, dining and drinking at this site that was enhanced with buildings and landscape features related to these activities.⁶¹

After Eastwick's death, Meehan encouraged the City of Philadelphia to purchase the property that had been Bartram's Garden and to preserve it as a park. The City bought the property in two phases, in 1893 and 1897, and the property has been part of Fairmount Park for almost a century.⁶²

Today, the museum is located in an urban area, surrounded by "Bartram Village," a city housing facility, and railroad tracks to the west, and industrial sites to the north and south as well as across the river to the east.

As mentioned above, an extension of the park, used for active recreation, serves as a buffer to the south. (plate 28) In 1988, the Association created a buffer to the north by acquiring, clearing and planting an abandoned industrial site. (plate 29) Trees in the garden also screen modern views. Although the site is surrounded by incompatible land uses and the museum has modern needs such as parking and meeting space, it continues to be a romantic haven of grounds and gardens and may serve as a educational and recreational landscape of the Schuylkill River heritage corridor in this urban setting. If the interpretation of the grounds is consistent, the space will be very pleasant and readable as an eighteenth century landscape, even if the visitor can see the Philadelphia Center City skyline in the distance, or hear a train run by the house.

Professor Charles Sargent, editor of Garden and Forest, praised the preservation of Bartram's Garden in 1896, and he wrote of a hopefulness for the future of the country, with this sort of effort, as an expression of a love of nature and growing things. This, he felt, would lead to the public's encouragement of the preservation, protection and promotion of forests and urban open space:

The City of Philadelphia might have selected within its boundaries some other site which would have been more desirable in location and natural features for a park, but in honoring the memory of John Bartram in this manner it has done something which is of far-reaching

significance. As a people we preserve and sometimes even attempt to embellish places of historic interest . . . ; but this is the first time in this country that the memory of a man who served his country by going into the forest and gathering trees and making them grow, and then sharing his discoveries with others, has been honored with a memorial like this, which will keep Bartram's virtues and his services in the minds of men as long as Philadelphia continues to be a city.⁶³

REVIEW OF SITE MANAGEMENT

Although there seems to be nearly continuous interest in the Bartrams and their garden and knowledge of available documentation such as plant lists, the garden has cycled through periods of care and neglect, and the level of interpretation has been low in the past. Because so much is known about Bartram and his botanical work, the Association is vulnerable to criticism about specific site elements. The Association's goals and current efforts are commendable but fall short of achieving a cultural landscape that is easily "read" as an eighteenth century house and farm site. The site's physical and thematic relationship to the river is also under-interpreted.

The Association's mission statement emphasizes its general goals for maintenance of the site and education of the public. The period of significance assigned to the site is 1728-1823, the acquisition of the property by John Bartram to the death of William Bartram.

The \$.75 guide to the garden is an interesting and educational tool to the grounds. Most importantly, it includes the 1758 map and points out to the reader that the gardens are not currently planted as they were in Bartram's time. Many ideas about plants are expressed and accurately

placed in the historic context of Bartram's life and botanic work: Bartram as a farmer, plant exploration, discovery of plants, exchange with European botanists and the medicinal use of plants. Plants of Bartram's era that visitors can identify in other settings, such as the Pennsylvania state flower, mountain laurel, and gingkos that can be found on city streets, are also described. The guide is an example of an interpretation tool that is accurate and interests the visitor. It is an indication of the potential of the site and the Association.

The Association's emphasis on school programs also addresses their educational focus. In 1988, 125 groups took part in the Children's Education Program.⁶⁴ The Association has also made an effort to involve the surrounding community. Local children work on the site as members of the Youth Conservation Corps. The Association has also adopted a local school class from the Morton School, 63rd and Elmwood Streets. These students receive science classes in exchange for work in the garden. While the educational programming is strong, its subject could be improved. The Association is presently working to increase the historic interest and legibility of the site with both structural and landscape improvements.

The current restoration projects emphasize the structures of the site. In November, 1988, the Association

received concept approval from the Philadelphia Historical Commission for a million dollar restoration, adaptive use and new construction plan directed at the outbuildings. According to the plan, the buildings will be restored to their original appearance while, at the same time, adapted to suit the needs of the programs and activities of the Association.⁶⁵ A future plan includes the construction of a new greenhouse and the restoration of the seed house. Recent garden efforts include the recreation of the kitchen garden with "eighteenth century, southeastern Pennsylvania" herbs and vegetables and plantings around the house associated with John and William Bartram's travels, writings and plant exchange.⁶⁶

As a heritage corridor "bead," one finds that the present link to the river is weak and that there are lacunae in the site's historic integrity. However, the site would be a valuable "bead" on the strand of the river. It is a fact that Bartram's Garden has suffered from its distance from the main portion of Fairmount Park (figure 16), its current environment, and the poor reputation of the Schuylkill in this area for most of this century. In his 1924 treatise on the redemption of the Lower Schuylkill, Lewis wrote of its attraction and its inaccessibility. "Indeed there is no more romantic spot, hallowed with

memories of the past, within the boundaries of Philadelphia, and none in some respects more inaccessible."⁶⁷

Lewis called for an establishment of a greenway along the Lower Schuylkill, a southward extension of Fairmount Park that would provide a green "lung" for the city and protect resources like Bartram's Garden. (see figure 17)

. . . there is no reason why both banks of the river from the Dam to Fort Mifflin on the west, and to League Island on the east, should not be one continuous garden with driveways and foot ways, through avenues of trees for the entire distance it winds its way through the heart of our city.⁶⁸

Proposals for this type of linkage continue to the present day for a river-long heritage corridor. While Lewis' vision and many others have not been realized, a few plans above the Fairmount Dam have. For example, a bikeway from Philadelphia to Valley Forge along the river is nearing completion. The Schuylkill River Esplanade near the Water Works provides river access and "wayside stations that trace the river's history from the time of the Lenape Indians through its role in the city's life today."⁶⁹

Below the Dam, many riverfront proposals consider Bartram's Garden and possible links to other natural and cultural areas. The Philadelphia City Planning Commission has proposed building docks for Bartram's Garden and Fort Mifflin so people can visit these sites by boat.⁷⁰ Safe access by water to the site would attract boaters. It would

also make visitors more aware of the river, teaching and demonstrating the historic role of the river for transportation of goods to the city and the Delaware. A University of Pennsylvania Graduate School of Fine Arts studio project called for the establishment of a bikeway from Lindberg Avenue near Bartram's Garden to Fort Mifflin.⁷¹ A link to Bartram's Garden from Cobbs Creek is also a possibility. (See figure 16 for proximity).

SUGGESTIONS

In the eighteenth century, Bartram's Garden was a dynamic space, and education was a primary focus. The site may celebrate these two features again with the added lessons suggested by historical context. As a site on the Schuylkill River heritage corridor, the theme of the riparian farm and garden may be emphasized by attending to three areas: the river's edge and river views, the farm atmosphere, and Bartram's botanic specimens and methods. Another reason to promote the site's relationship to the river is that it is one of the few places in the area where there is public access to the water.

The heritage corridor, as a whole, faces challenges in the urban context. A study of Bartram's Garden serves as a point of departure to suggest physical and thematic links in the Lower Schuylkill and the entire length of the corridor. Too often, in the urban context, the totality of the river is ignored. A river is not a static thing; it moves, coming from somewhere and going somewhere. Clearing and improving the river trail will encourage visitors' riparian circulation and evoke thoughts about Bartram Garden as a river site. The concept of a river is an important educational tool, including many aspects of interpretation

for children and young people. Boat access is another important activity to recreate. Research by this author and by members of the John Bartram Association has not revealed the location of the Bartrams' dock. If documentation becomes available, the dock's interpretation would be valuable to the historic integrity of the site. In any case, the city's proposal to build a dock so there is access to the site for boaters should be realized.

The reclamation of marshland by Bartram for farming purposes is an idea that should be emphasized in the river walks and/or signage. Descriptions of activities on other lands visible to Bartram may also be shared with visitors to explain the evolution of land use on the river in this area. The banks should be revegetated with historic and native species as planned.⁷²

The allee between the house and the river is a significant landscape feature related to the theme of a house site on the river. It should be restored and maintained. Pruning and clearing at the river bank will also help to improve the historic views to the river mentioned by Bartram's visitors.

The overall farm atmosphere may be improved at Bartram's Garden. In addition to interpreting the marshlands as a component of the farm landscape, the relationships of solids and voids at this site may be

manipulated. A "vivid pattern of open meadows surrounded by a forest and a river" maintained the agrarian experience in a Connecticut town park which replaced a historic farm.⁷³ The new wildflower meadow at Bartram's Garden not only buffers the north side of the house site, but also evokes the historic, agricultural character. The acquisition of additional lots would augment that feel and help to build a corridor of open space. Recreational use is also compatible with this idea. The boundaries of Bartram's farm and his crops during its peak years may be conveyed with a map and/or driving tour.

The Schuylkill River farm as a botanical laboratory and holding station for specimens, of course, is important to interpret. Planting material, lay-out and botanical practices must be considered.

All planting material should be associated with John and William Bartram. Correspondence between John Bartram and Peter Collinson and the broadside catalogue issued by William Bartram and John Bartram, Jr., "A Catalogue of Trees, Shrubs, and Herbaceous Plants," (1738) serve as guides.

The open spaces should be mowed at a very high setting or scythed if possible. Grass species are an important consideration. Some areas may be "let go" with historic, wild plants to add to the historic character and to lower

maintenance. The species of "weeds" that the Bartrams used for medicinal and culinary purposes should be researched and utilized.

In addition to planting historically accurate species, it is important to consider that Bartram did not plant his botanic specimens in a formal manner. Eighteenth century visitors to the garden commented on this seemingly casual botanic method; Reverend Manassah Cutler, for example, wrote that "everything is very badly arranged, for they are neither placed ornamentally nor botanically, but seem to be jumbled together in heaps."⁷⁴ The garden lay-outs should illustrate how Bartram worked in the garden and tended individual plants. Tours or hand-outs could describe the micro-climate rationale for the positioning of certain plants. Furniture, fencing, walkways and signage must also be considered for their contribution to the historic setting.

In addition to specific features of the grounds, landscape practices may also be recreated. According to Bartram's Garden's director, Martha Wolf, some of Thomas Jefferson's first plants for Monticello came from Bartram's Garden. It would be beneficial to Bartram's Garden if some plant exchange were reestablished. While it is commonly thought that historic plant species are difficult to obtain, plant trading is currently and successfully practiced by

gardens such as Mt. Vernon, Monticello, and the William Paca House and Garden in Annapolis and would be excellent sources of plant material.⁷⁵ Bartram's Garden could initially experiment with a small-scale propagation plan and expand when feasible. Historic plant species are also popular items and could be sold by the Association to raise money, increase their visibility, and educate the public.

Maintenance issues should be delineated in plans for the garden. Gardens are dynamic objects and flexible policies should be proposed for the plants' and gardens' growth and development. Historical context must be addressed. In his 1984 restoration plan for Bartram's Garden, Rudy Favretti states the necessity for tree pruning, for example, but fails to describe pruning methods, forms or scale.⁷⁶

Documentation of the gardens should be a part of the maintenance program. Detailed records should describe the success and failures of plants and lay-outs. This thematically continues the work of the Bartrams and will help to manage the gardens' health and growth. While Bartram's gardens were not formal, his record-keeping was. The plan needs to allow for changes in the landscape if lay-out or plants fail, and the changes should be recorded.

ENDNOTES FOR CHAPTER FOUR

1. The current heritage corridor proposed for the Schuylkill River ends at the Fairmount Dam; it does not include the Delaware Estuary. The Lower Schuylkill's water quality has prevented it from being designated as part of the Scenic River system or being considered for the heritage corridor. According to William Phillips of the Pennsylvania Department of Environmental Resources, it is only a matter of time and clean-up activity before the lower section will be included. The Blackstone Heritage Corridor which reaches into two urban areas, Providence, Rhode Island and Worcester, Massachusetts, may serve as precedent.
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8. Edge, 20.
9. Ibid, 22.
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13. James J. Brett, The Mountain and Migration: A Guide to Hawk Mountain (Kutztown, PA: Kutztown Publishing Company, Inc., 1986), 15.
14. Charles J. Adams, III, Ghost Stories of Berks County, Pennsylvania (Shillington, PA: Mifflin Publications, Inc., 1982).
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CHAPTER FIVE: CONCLUSIONS

The suggestions for the study and interpretation of the three case studies as presented in Chapter Four may be synthesized to address issues concerning the interpretation and management of the Schuylkill River heritage corridor. The case studies serve as a point of departure to discuss heritage corridor theory and practice that maximize the historic integrity and legibility of sites along the corridor and of the corridor itself. It should be mentioned here that the success of the corridor depends on regulatory and technical assistance measures. Resources must be protected and well-managed so that the educational and recreational activities that are the focus of this thesis may occur. Two helpful resources for the policy component of heritage corridor management are A Citizen's Guide to River Conservation and Saving America's Countryside.¹ In addition to acquiring rights for public access to the Schuylkill and its adjacent lands, controls to protect environmental, scenic and cultural resources are essential. Water quality must be maintained or improved, and riparian wildlife must be encouraged and protected.

Five major considerations for the Schuylkill River heritage corridor emerge from a review of the interpretation and management of the case study sites. They are the

heritage corridor audience, river themes and their interpretation, heritage systems, the natural/cultural connection, and recreation links. These thoughts may be applied to other river heritage corridors as well.

The Heritage Corridor Audience

Who is the audience for the Schuylkill River heritage corridor? In its heritage corridor interpretation plan, the Blackstone River Valley National Heritage Corridor Commission suggests a model that may be considered for the Schuylkill. The Commission divided its heritage corridor users into three groups: residents, local visitors, and tourists.² Information about a heritage corridor's audience and their needs must be incorporated into a corridor's management and interpretation plan in order to achieve a comprehensive and enjoyable landscape that people will appreciate and care for.

Understanding local resident's views of an area may be gleaned through interviews. The sites in a community's vicinity must be meaningful to the people in that community, as links of a corridor need local support. The heritage corridor needs local caretakers. The interviewer should note current attitudes and needs as well as suggest possible heritage corridor plans. Promoting river awareness to residents is also important; people may have negative images of the river that are no longer accurate.³

Interpretation must take into account that the majority of all the heritage corridor users, residents, visitors and tourists, are recreationists or history hobbyists who are unsophisticated about Schuylkill themes and historic landscape elements. This is true of the case study sites. Even Hawk Mountain which has a "birding" reputation and is physically removed from major population centers, is largely visited by amateur or non-birders.⁴ School children, who similarly have little or no training in colonial history or botany, comprise a large portion of the Bartram's Garden audience.

River Themes and their Interpretation

While the physical and psychological primacy of the Schuylkill River varies from site to site, all three case study sites have several of the Schuylkill River themes that were described in Chapter One. Three points related to river heritage corridor themes emerge from a review of the case study sites. First, as described in Chapter One, there are cultural heritage themes related to the Schuylkill other than those listed by the Pennsylvania heritage parks program -- iron and steel, coal, textiles, machine and foundry, transportation, agriculture, lumber and oil. The river corridor is a linear travel and settlement space where people lived and worked, and still do. "House sites" and "recreation" were suggested in this thesis as other themes

that should be studied and interpreted on the river. "Work" may be a major theme of the river, but other ideas related to human habitation should be expressed as well.

Secondly, new themes, variations of those listed in Chapter One, arose in the case study analysis. These additional themes bring new river sites and new ideas together. For example, Bartram's Garden and Hawk Mountain have river corridor "flora and fauna" themes related to American naturalists and conservationists. John and William Bartram (Bartram's Garden) and Rosalie Edge and Maurice Broun (Hawk Mountain Sanctuary) are significant individuals associated with their sites and with their vocations. In addition, "historic" visitors to these sites, related to this theme of American naturalists and conservationists, may be described in site interpretation. Rachel Carson and Roger Tory Peterson were involved with the Sanctuary. Ornithologist Alexander Wilson as well as George Washington and Thomas Jefferson, both avid plantsmen, spent time in Bartram's Garden. Naturalist and conservation education at both these sites is also ongoing. Another Schuylkill River heritage corridor site that contributes to this theme is John James Audubon's home and wildlife sanctuary in Montgomery County.

Third, how may multiple themes be interpreted? River themes must be chosen and organized in a logical manner. Broad ideas such as "Work on the River," "River Settlement,"

and "Travel in the Schuylkill River Valley" may be used to group the themes relayed in Chapter One as well as their variations. The "Travel" heading, for example, could include transportation and recreation. "River Settlement" may incorporate industrial or work themes such as iron and agriculture as well as "house sites."

Heritage Systems

The case studies reveal the prevalence of heritage or cultural systems along the Schuylkill River and at specific sites. For example, at the small Allegheny Aqueduct park where the restored aqueduct stands as a quiet monument to nineteenth century transportation and industry on the Schuylkill, there are eight inter-related networks: the Schuylkill River, the Allegheny Creek, the millrace, the canal, the railroad, the trolley line, Old River Road, and Route 724. Each of these linear systems had a role in this area's cultural history, and they were all variously tied to the river.

As mentioned in "The Heritage Corridor Audience" above, the users of the corridor sites must be considered. It is very important to realize and to implement the fact that visitors, used to static monuments, may have to be trained to see and to understand these fluid, extended networks and how they worked.

Some systems, the canal, the railroad and some roads, trace long sections of the path of the river. These transportation systems may recreate historic patterns of corridor and move people from site to site. Visitors can experience the corridor more fully if transportation systems receive attention. All of the river-related systems may be utilized today to explain the corridor's land use history. The restoration of both canal features and the bed itself should be continued. If sections are rewatered, people can enjoy the canal experience by boat, canal boat or canoe. This recreation is very popular on the Lehigh Canal and on the C & O Canal. Towpaths can be active spaces for walking, running, biking or bird watching. The use of a local resource, the C. Howard Heister Canal Center on the Union Canal, by Schuylkill River heritage corridor visitors should be encouraged, and the historic relationship between the two canals should be explained.

The railroad along the river and canal can be utilized in two ways. First, excursion lines like the Hawk Mountain line (W.K. & S.) recreate train trips on historic routes. Secondly, abandoned railbeds are wide, flat and well-drained and perfect for hiking and biking. The organization, "Rails to Trails," is very active in this venture and is eager to provide assistance in railbanking.

For those driving cars, one primary driving route would promote use of the corridor. Extensive signage would

encourage the recognition and understanding of sights related to the Schuylkill.

Interpretative systems help people read the corridor's complex landscape. Signage at sites, on roads, and on trails may be arranged by themes with different colored routes. River mileage should be included on each sign so people have a sense of their position on the river. The use of historic images on signs at a site are keys to helping the viewer visualize the historic context. Signage may also be utilized to include privately owned or otherwise inaccessible sites in historic themes. Brochures, maps, visitors' centers, exhibits, demonstrations and school programs are other important interpretative tools.

The Natural/Cultural Connection

The interplay of natural systems with cultural features must be studied and conveyed to visitors. The Hawk Mountain case study most powerfully illustrates this fact. Because the Sanctuary is large and protected and the Association's primary interest is the environment, such concepts as time, cycles and patterns of man and nature are well explained at the site and easy to "read" in the landscape. This thesis began, in Chapter One, by describing the physiographic regions of the river. It is important to realize that good land management practice and innovative cultural interpretation on a river must always consider the

underlying natural networks. Along the Illinois and Michigan Canal National Heritage Corridor, four sites reflect the Ice Age heritage of the canal route. Visits to these natural history sites encourage visitors to think about how topography shaped the canal route when exploring other trails and parks in the corridor.

To improve the natural/cultural connection, a vegetation guideline should be developed for the Schuylkill River heritage corridor. This document would be especially helpful in the restoration of a vernacular, altered yet unmaintained, site like the Allegheny Aqueduct park. In New River Parkway Concept Plan vegetation for floodplain areas, valleys and uplands as well as the preservation and recreation of river views are considered.⁵ The planting information in the Schuylkill River Design Guide and in physiographic region analysis may serve as a starting point for a comprehensive work that adds information about how vegetation has been affected by changes in land use within the different zones.

When looking at individual sites, the case studies revealed particular examples of how Schuylkill River themes may be enhanced by interpreting the natural resource connection to human habitation and work. At Bartram's Garden, visitors may be told why reclaimed marshland was desired by farmers like Bartram. At the Allegheny Aqueduct park, the relationship between the Schuylkill Navigation

Company's slackwater and lock canal system and the river's form at this site should be explained.

Recreation Links

With every case study, physical links to other green areas with natural, cultural and recreational resources were possible. These links should be promoted. A survey done by the National Park Service for a greenway study in Berks County reveals that hiking is the most popular riverfront recreational activity in that area.⁶ The Hawk Mountain Sanctuary is surrounded by Pennsylvania state game lands to the south, east and west and the Weiser State Park to the southwest. The Appalachian Trail and the Port Clinton Towpath Trail connect to trails in the Sanctuary. At the Allegheny Aqueduct park, there is potential for acquisition of the railroad bed segment, and Schuylkill River towns like Reading, Pottstown, Spring City, and Phoenixville have riverfront trails. Bartram's Garden's involvement with and proximity to Fairmount Park, particularly the Cobbs Creek area, and a possible reclamation of the Baltimore and Washington rail line are its possible over-land links. Whenever possible, actual or thematic connections to ancient pathways and river crossings should be made.

Ideally, all heritage corridor sites should also have access to and from the river. Boat ramps or docks should be added wherever possible. Riverfront amenities such as

sheltered picnic areas and over-night camping facilities should also be developed to enhance the visitors' riverine experience.

The "heritage" component of these recreation links is multi-faceted. A hike in the corridor may be a means of visiting one or more historic sites. Following the form of a historic feature like the canal or railroad, on foot or by vehicle, is an interactive lesson in river-related transportation. Or, a visitor's focus may be natural or scenic features along the river corridor. Modern recreation may also be "re-creation." Activities related to historic food or sport may be enjoyed at heritage corridor sites.

Rivers are special landscapes with unique features. Rivers are the unifying elements for these resources, but they also express movement and change. Rivers and their related landscapes are fragile systems that need protection. The heritage corridor concept provides a framework for protecting and enhancing a river valley's resources. Public accessibility to the river as well as educational and recreational opportunities are important heritage corridor goals.

Current literature on cultural landscape preservation suggests theory and practice that may be applied to large vernacular landscapes, generally, and the Schuylkill River heritage corridor, specifically. In this thesis, three

different, yet representative, case study sites were examined using this cultural landscape theory and practice. A review of the sites' significance and current management led to suggestions that were both site specific and corridor-wide in their implications.

Hopefully, these considerations related to the study and interpretation of the Schuylkill River heritage corridor may serve as an aid when assessing specific sites along the river and when forming a comprehensive interpretation plan for the corridor. A Schuylkill River heritage corridor may lead people to the river and provide them with natural and cultural features which possess integrity and legibility.

In this thesis, the "beads" on the heritage corridor necklace have been described as representing three things: types of proprietorship, Schuylkill River themes, and resources (natural, cultural, recreational, and economic). The beads may also represent people, young and old, with their own ideas and own interests, brought together by the river. Every bead is unique and separate, and every bead is linked, physically or thematically, by the Schuylkill River in this heritage corridor.

ENDNOTES TO CHAPTER FIVE

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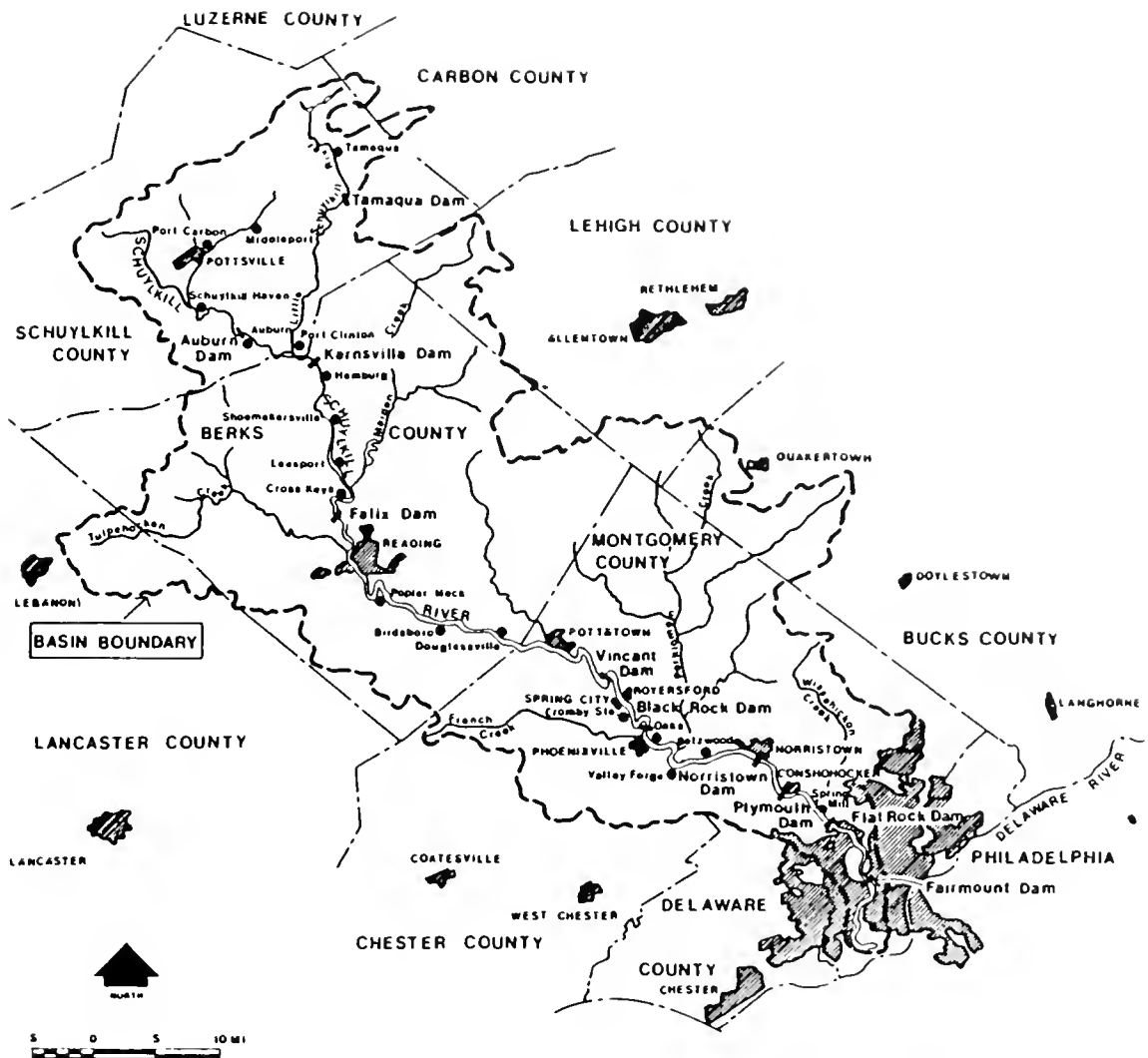


Figure 1. The Schuylkill River Basin, (From Water Resources of the Schuylkill River Basin, Water Resources Bulletin No. 3, 1968, 3).

APPALACHIAN
MOUNTAINS



**FOLDOUT
HERE**

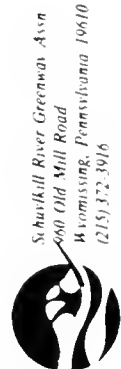
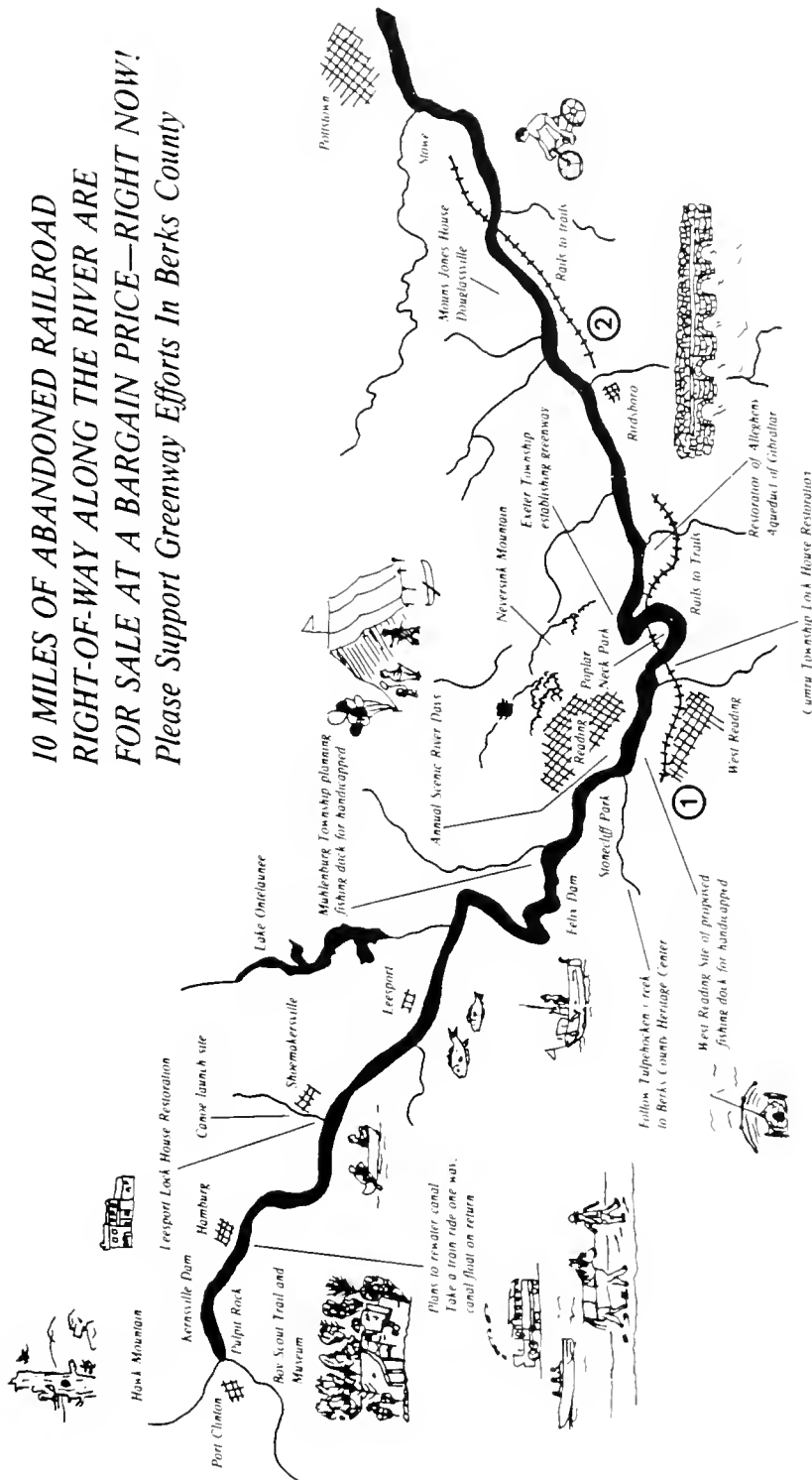
Figure 2.



Graphic Sections of the Schuylkill River Valley, (From Pennsylvania, Department of Environmental Resources, "Geologic Map of Pennsylvania," 1980).

ACTION NOW!

**10 MILES OF ABANDONED RAILROAD
RIGHT-OF-WAY ALONG THE RIVER ARE
FOR SALE AT A BARGAIN PRICE—RIGHT NOW!
Please Support Greenway Efforts In Berks County**



- ① Abandoned railroad West Reading to Cribbville
- ② Abandoned railroad Birdsboro to Stowe

Figure 3. Greenway Efforts, (Schuylkill River Greenway Association, Wyomissing, PA, 1989).

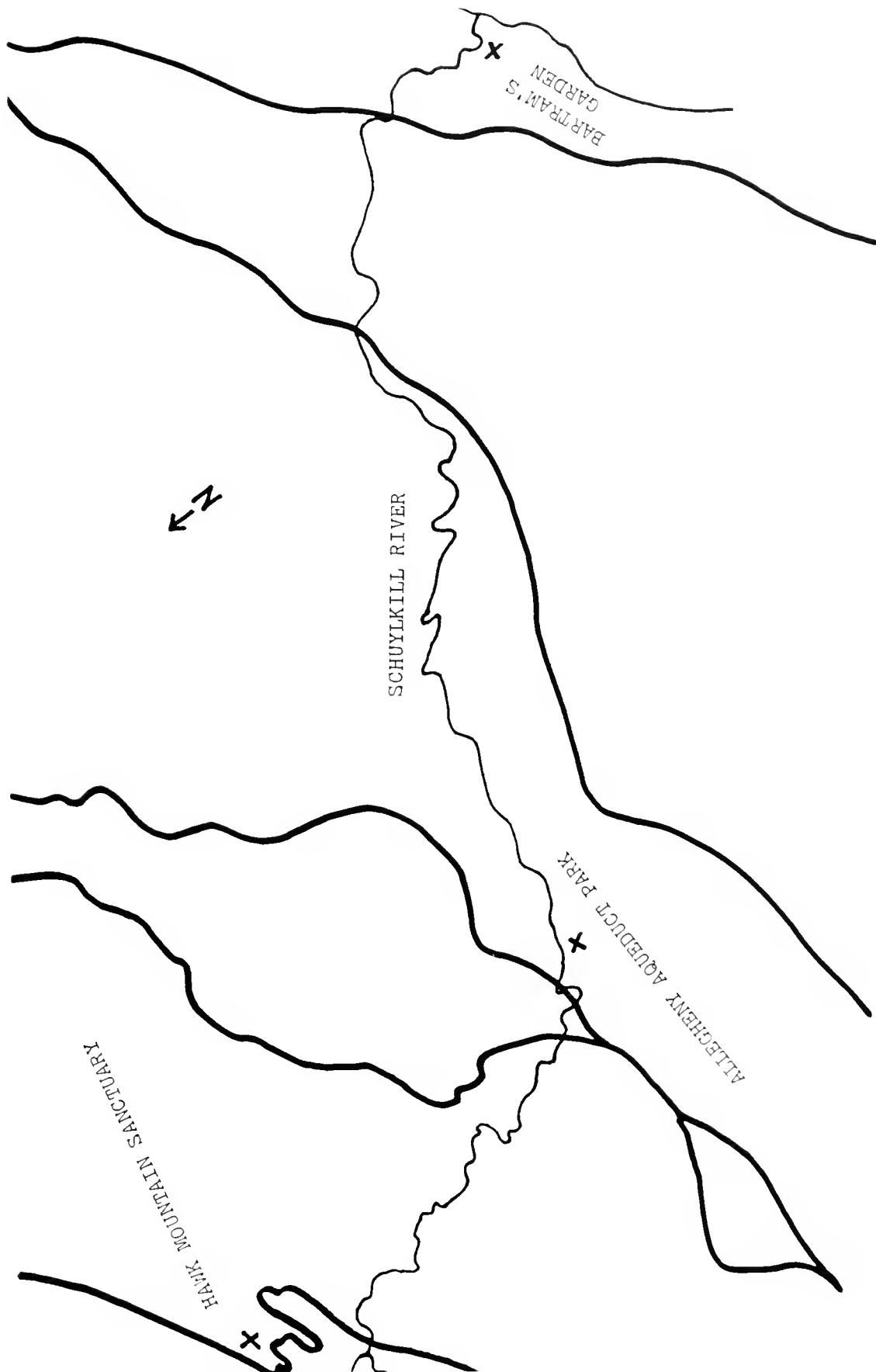


Figure 4. Case Study Sites. 131



Figure 5. Map of Hawk Mountain Sanctuary Area, (From U.S. Geological Surveys, Orwigsburg, PA (1976), New Ringgold, PA (1979), Auburn, PA (1980), and Hamburg, PA (1980)).

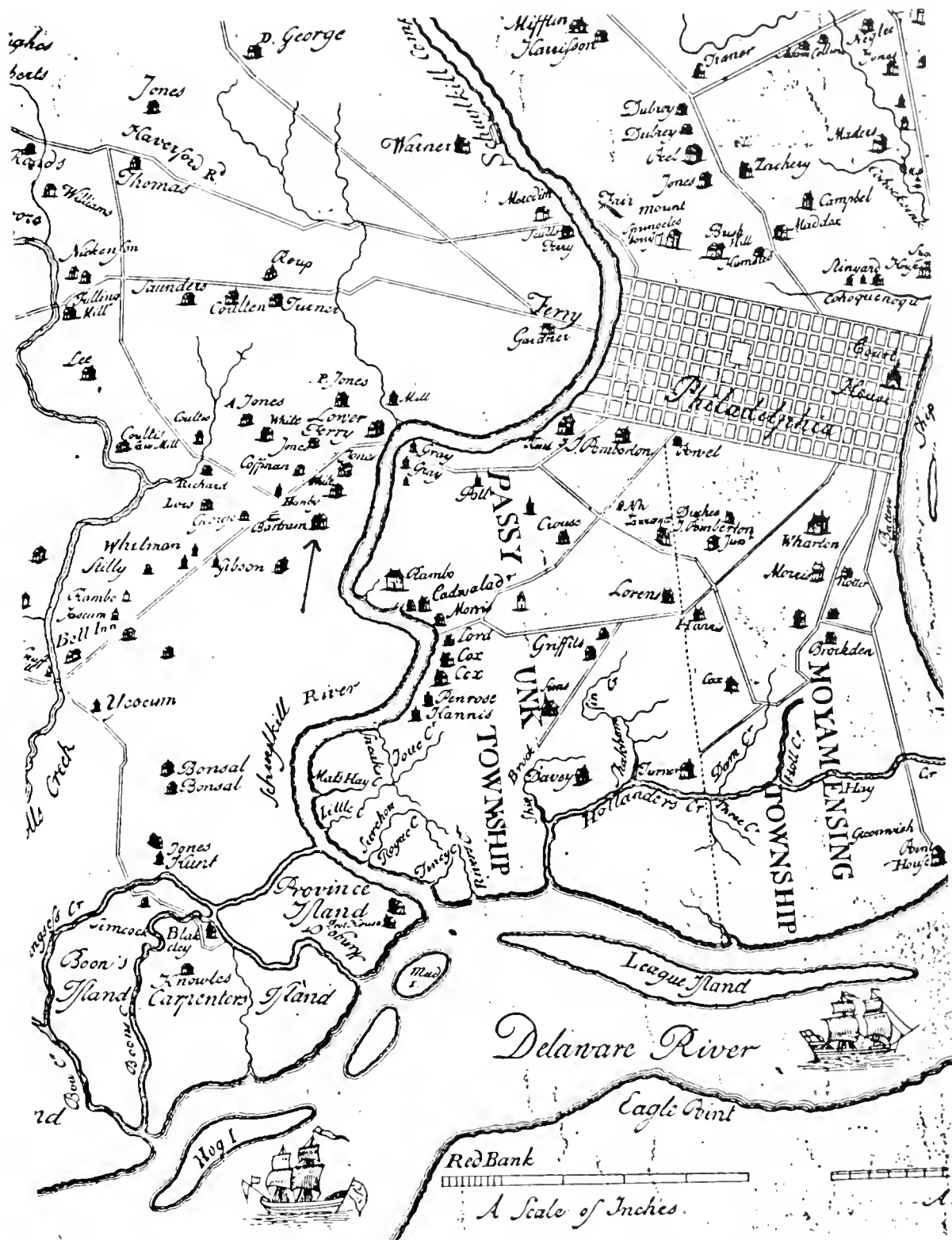


Figure 6. "Map of Philadelphia and Parts Adjacent" (1752), N. Scull and G. Heap (partial), (Historical Society of Pennsylvania, Philadelphia, PA).

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19

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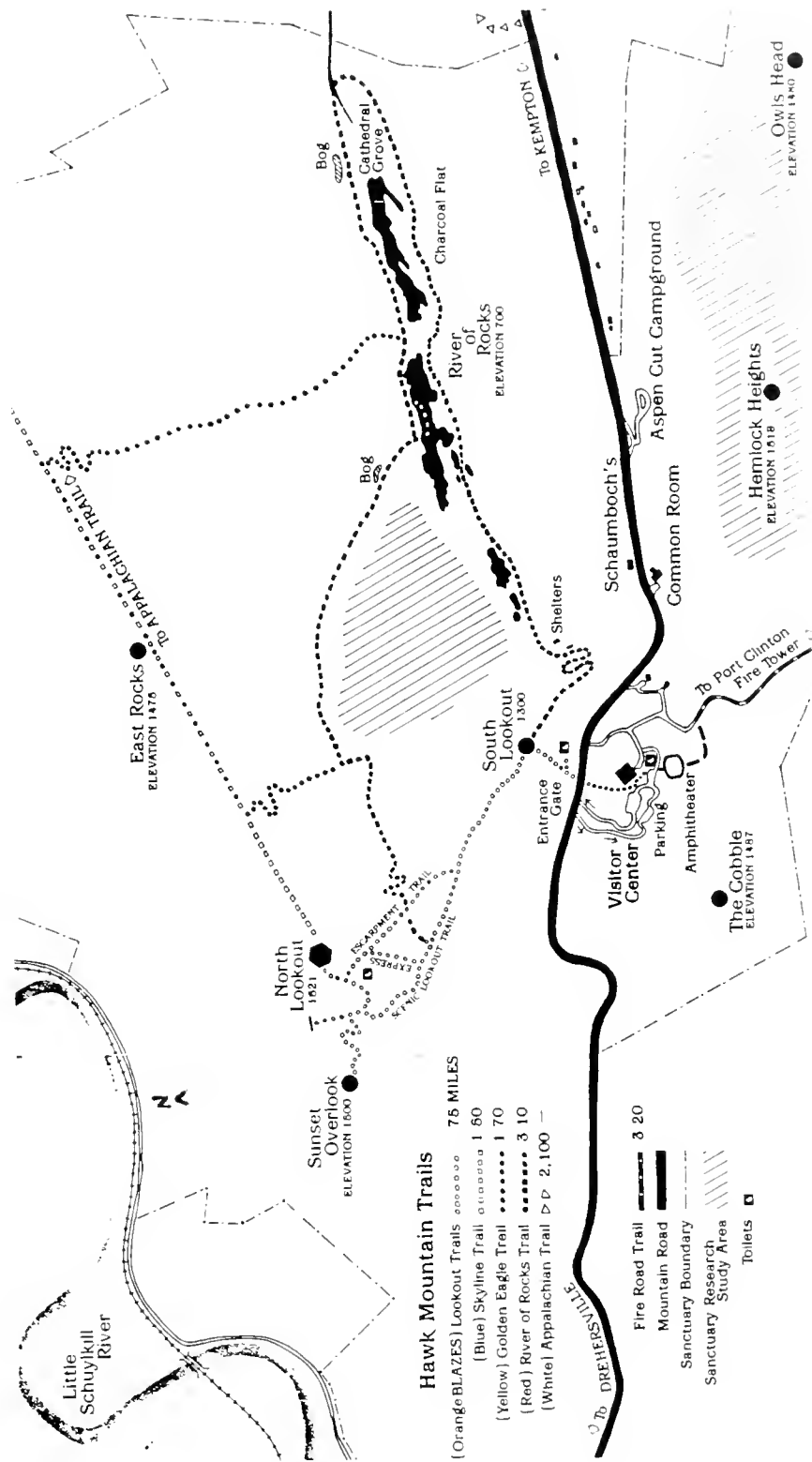


Figure 7. Hawk Mountain Trails Map, (Hawk Mountain Sanctuary, Kempton, PA).

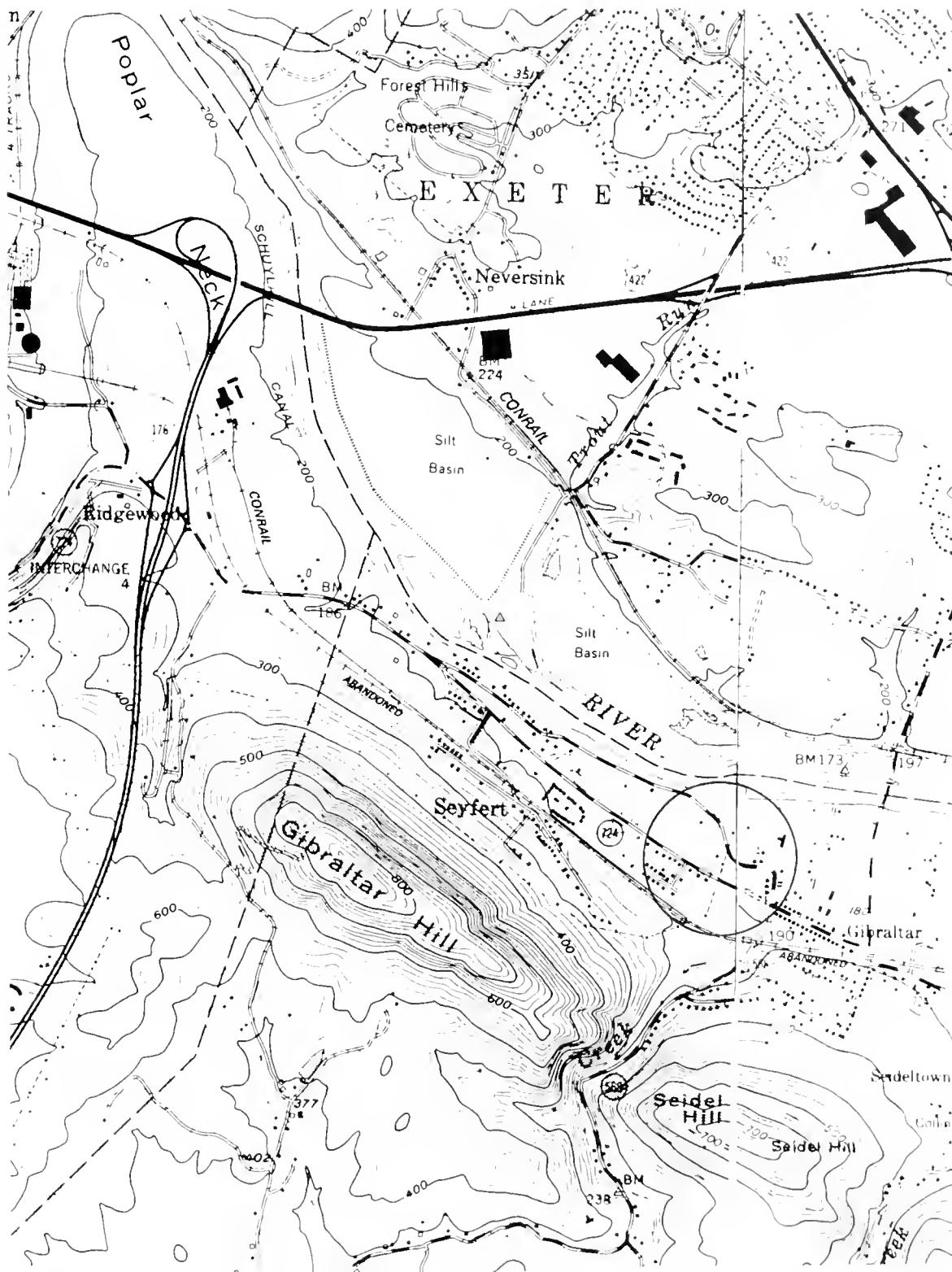


Figure 8. Map of Aqueduct Park Area, (From U.S. Geological Surveys, Reading, PA (1983) and Birdsboro, PA (1983)).

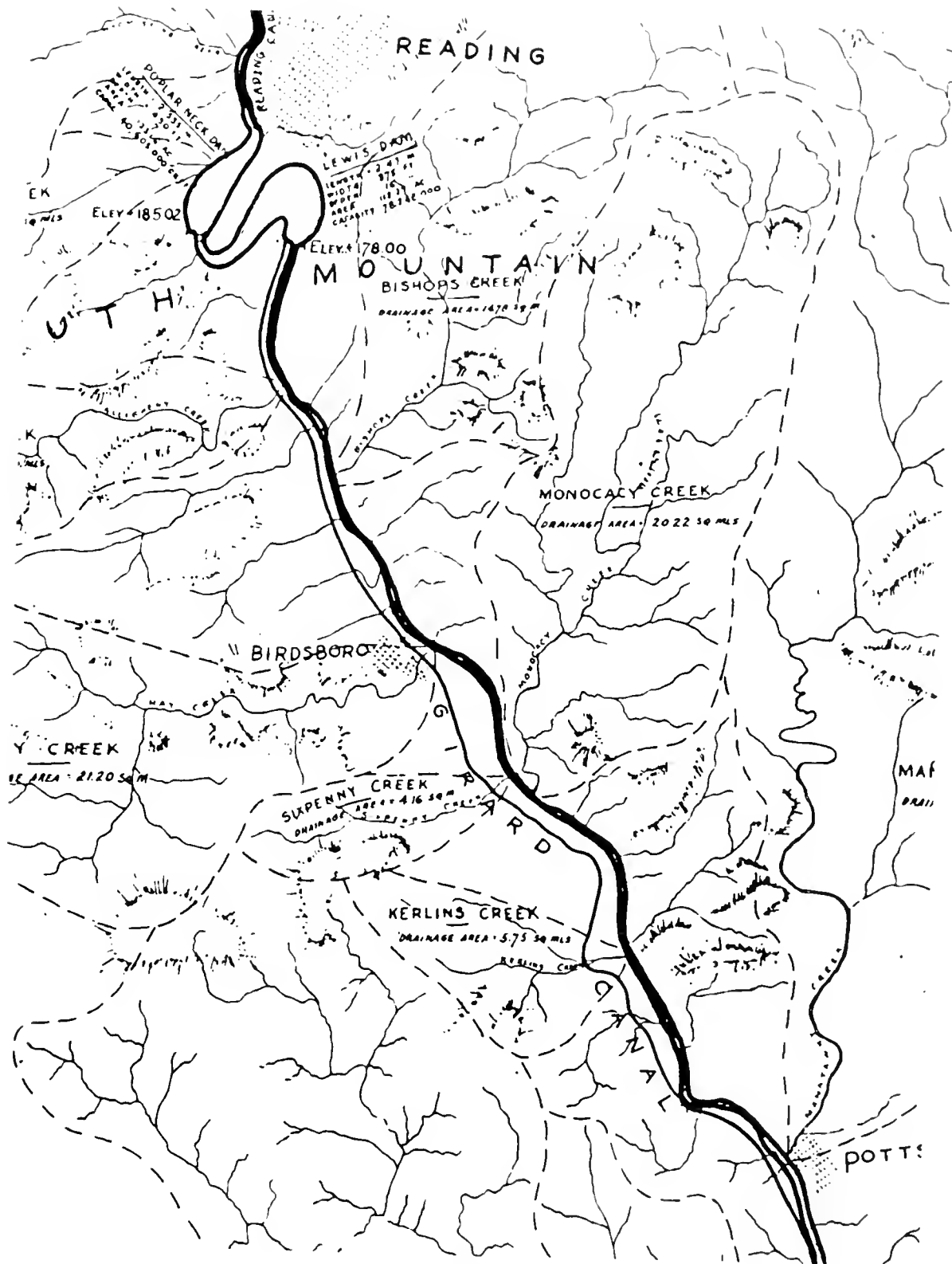


Figure 9. Map of the Girard Canal, (From E.F. Smith, "Map of the Drainage Area of the Schuylkill River, 1886).

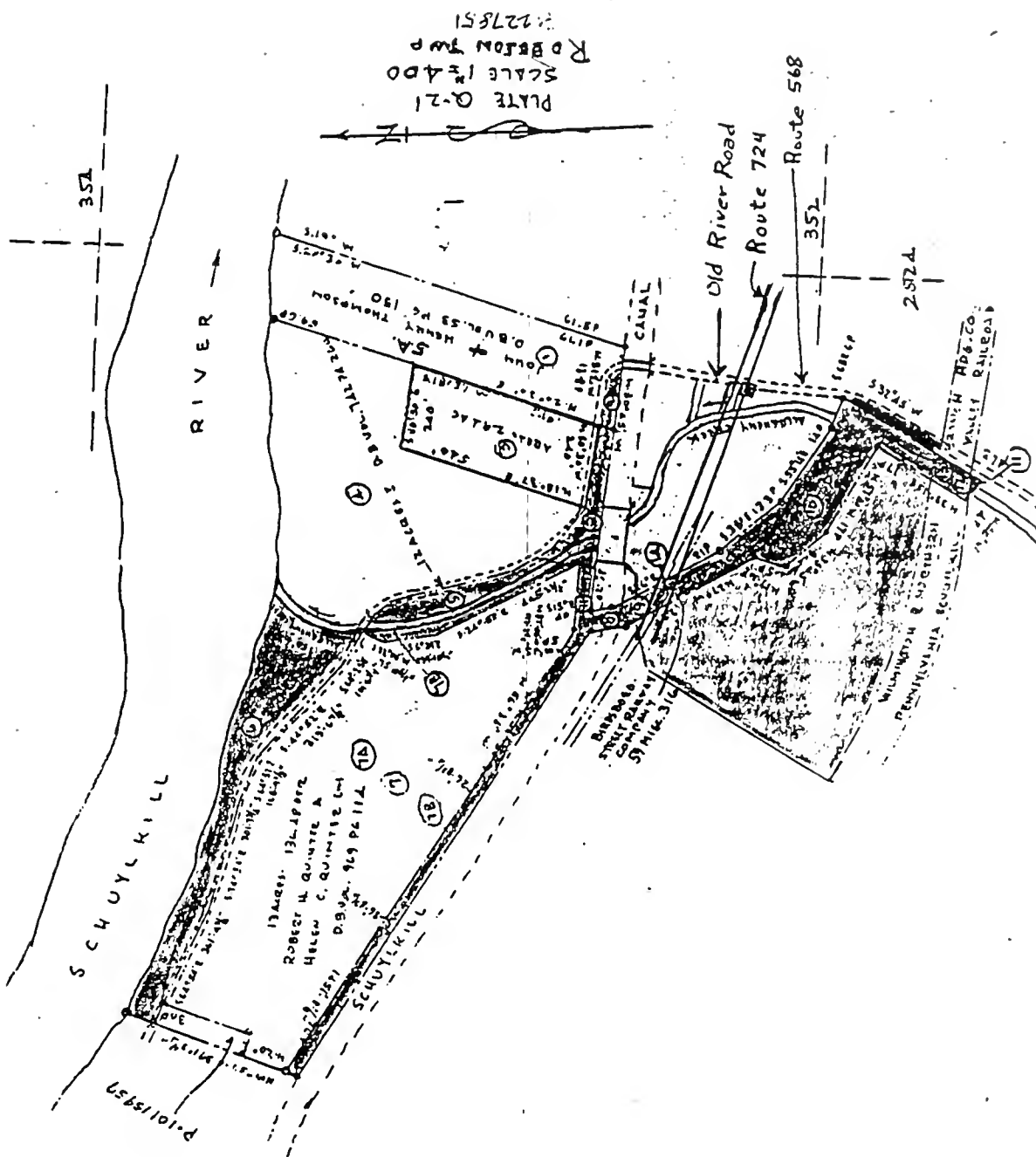


Figure 10. Deed Map of Aqueduct Park, (Samuel Russell for the Schuylkill River Greenway Association).

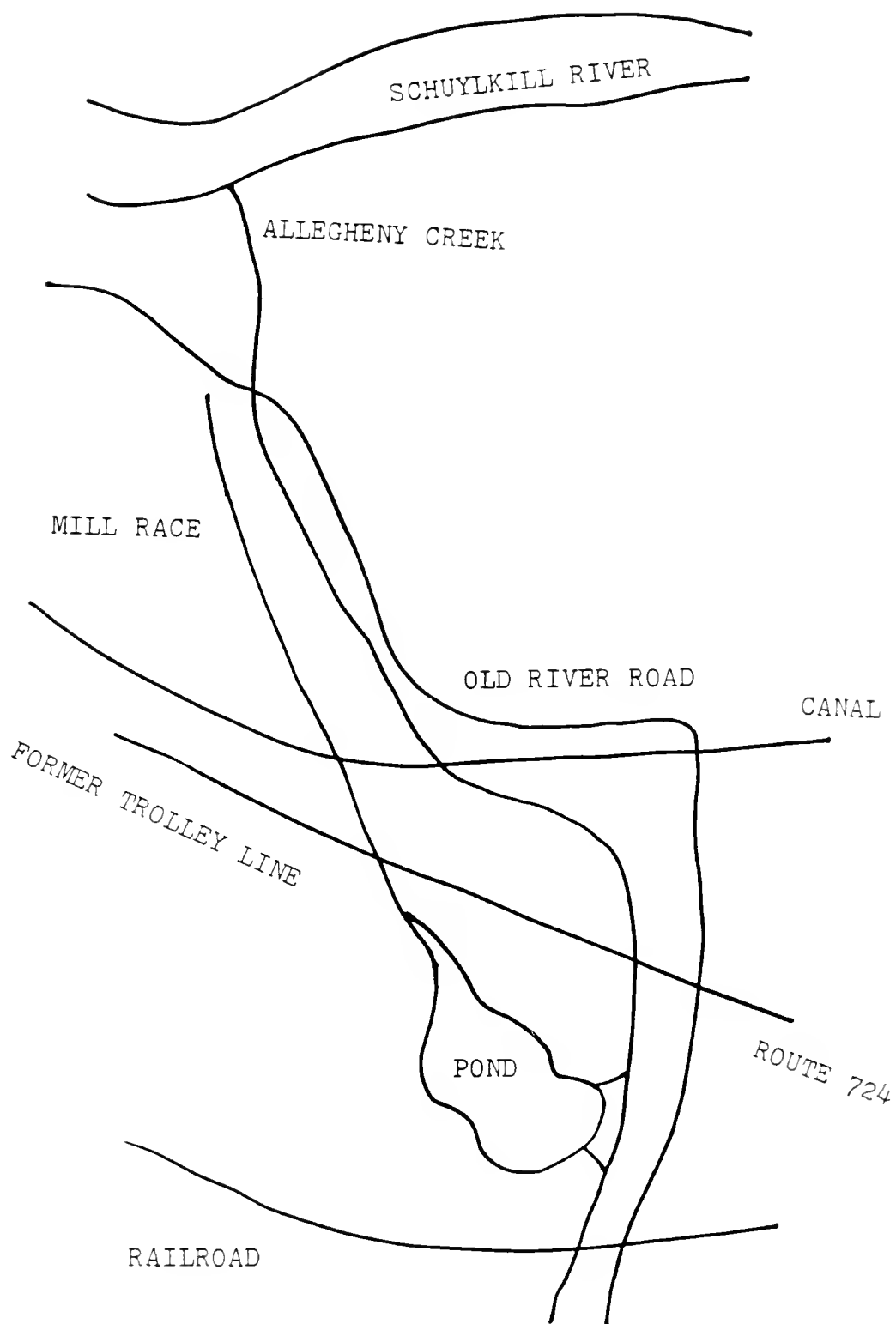


Figure 11. Sketch of Systems at Aqueduct Park.

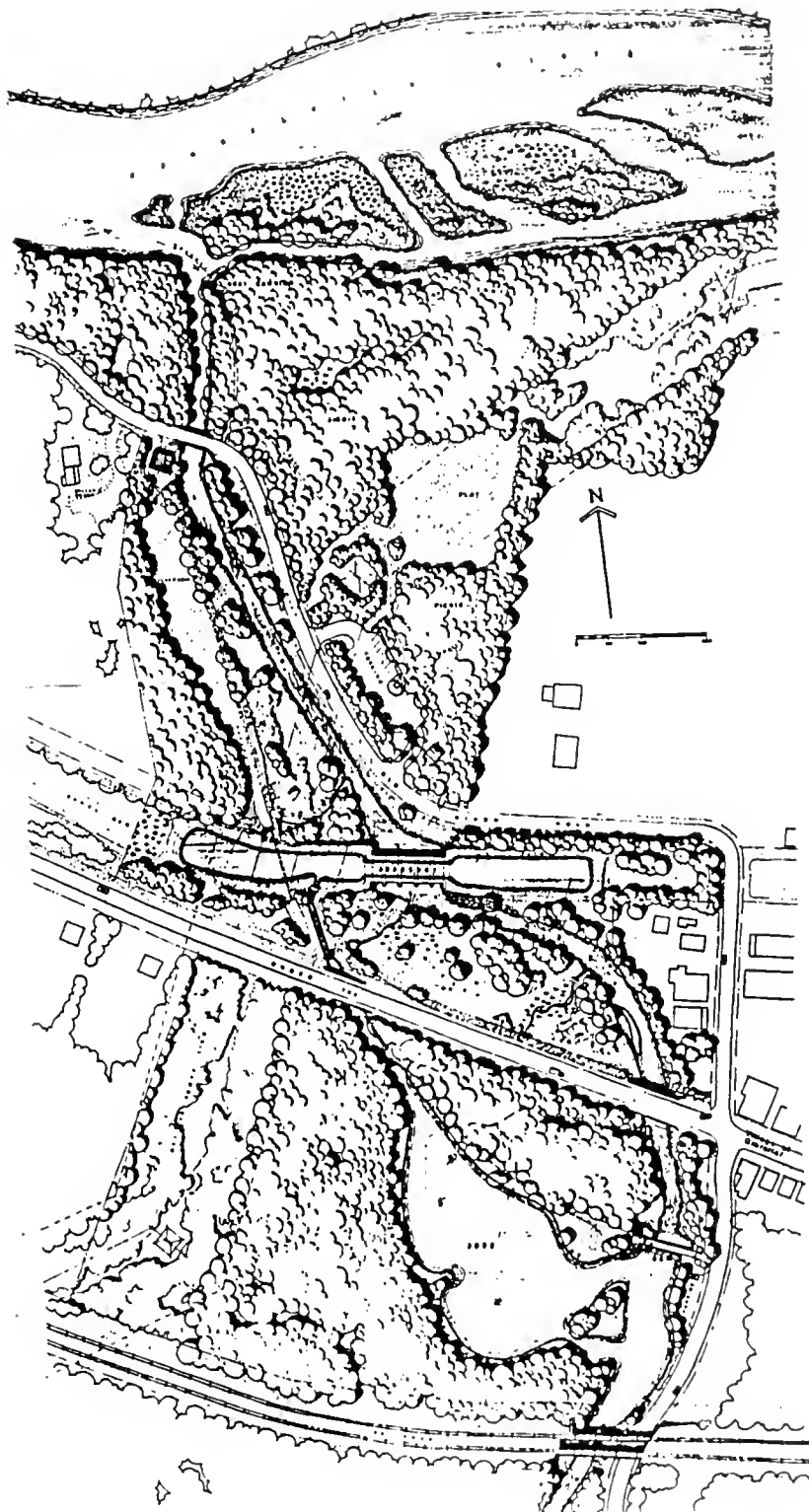


Figure 12. Plan for Aqueduct Park, (Robert Bartmann for the Schuylkill River Greenway Association).

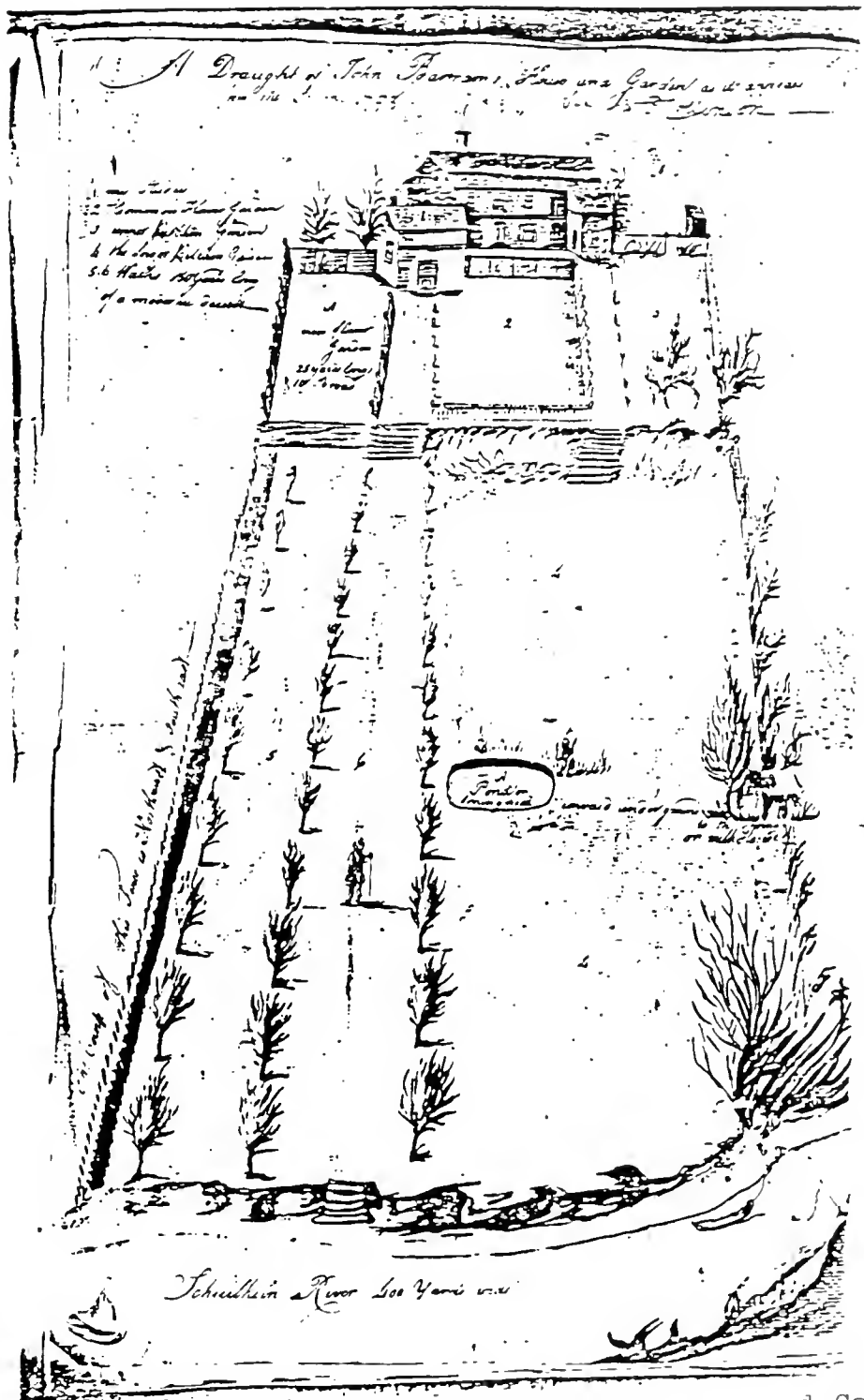


Figure 13. "A Draught of John Bartram's House and Garden as it appears from the River" (1758), John Bartram, (John Bartram Association, Philadelphia, PA).

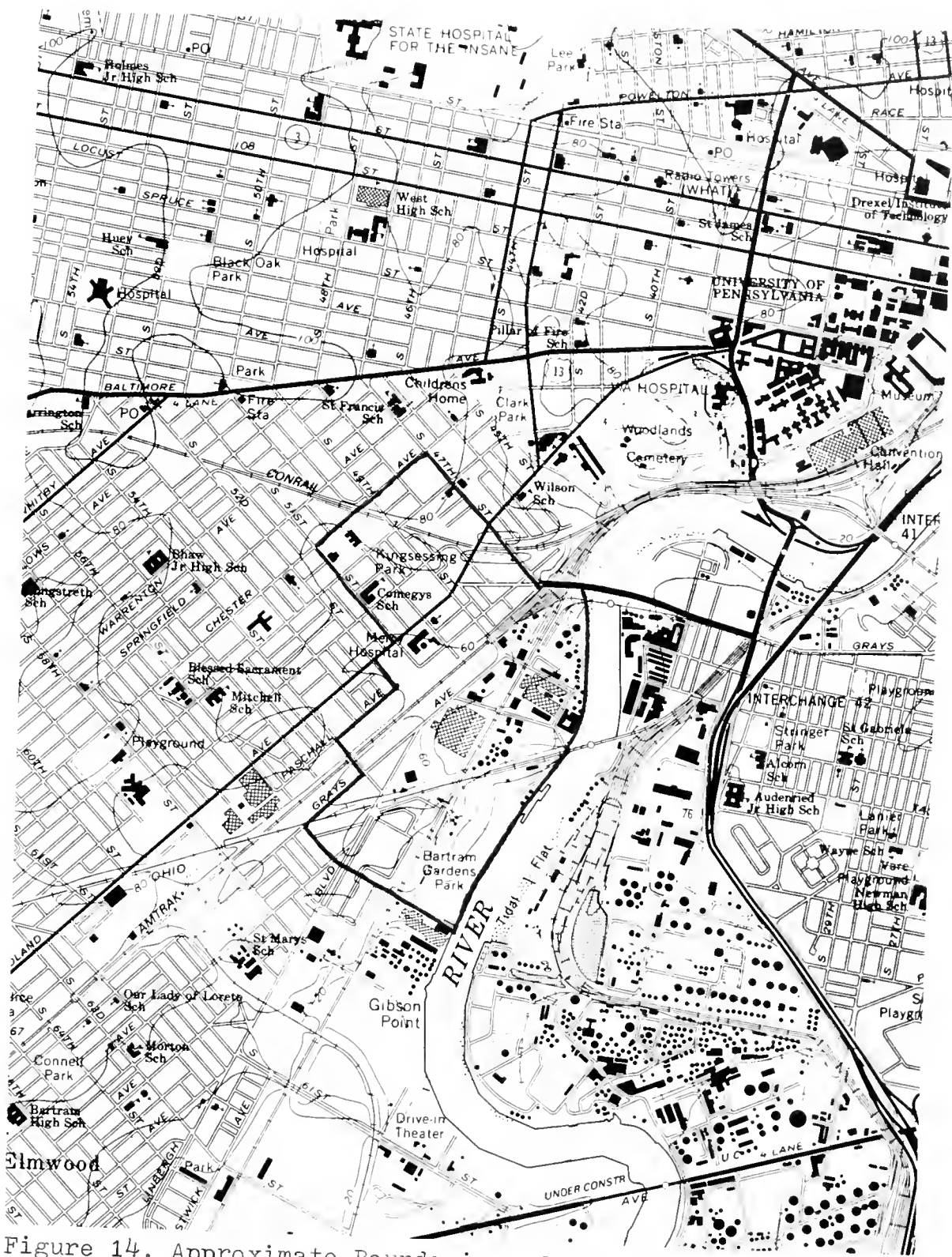
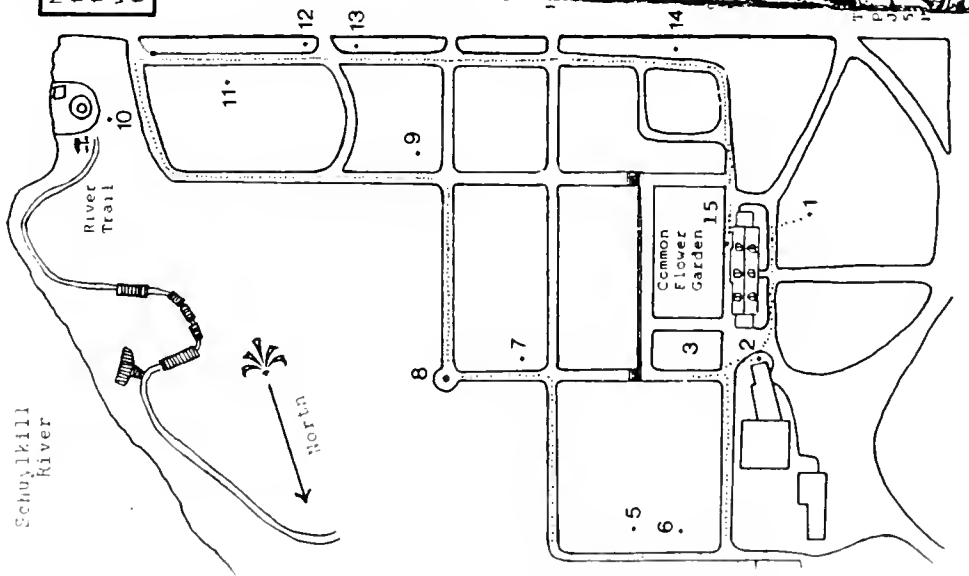


Figure 14. Approximate Boundaries of John Bartram's Farm in 1758.



Price: 75¢

Guide to Bartram's Garden



TURN TO THE BACK PAGE
FOR THE PRESENT DAY
MAP OF THE GARDEN.

Figure 15. Guide to Bartram's Garden, (John Bartram Association, Philadelphia, PA).

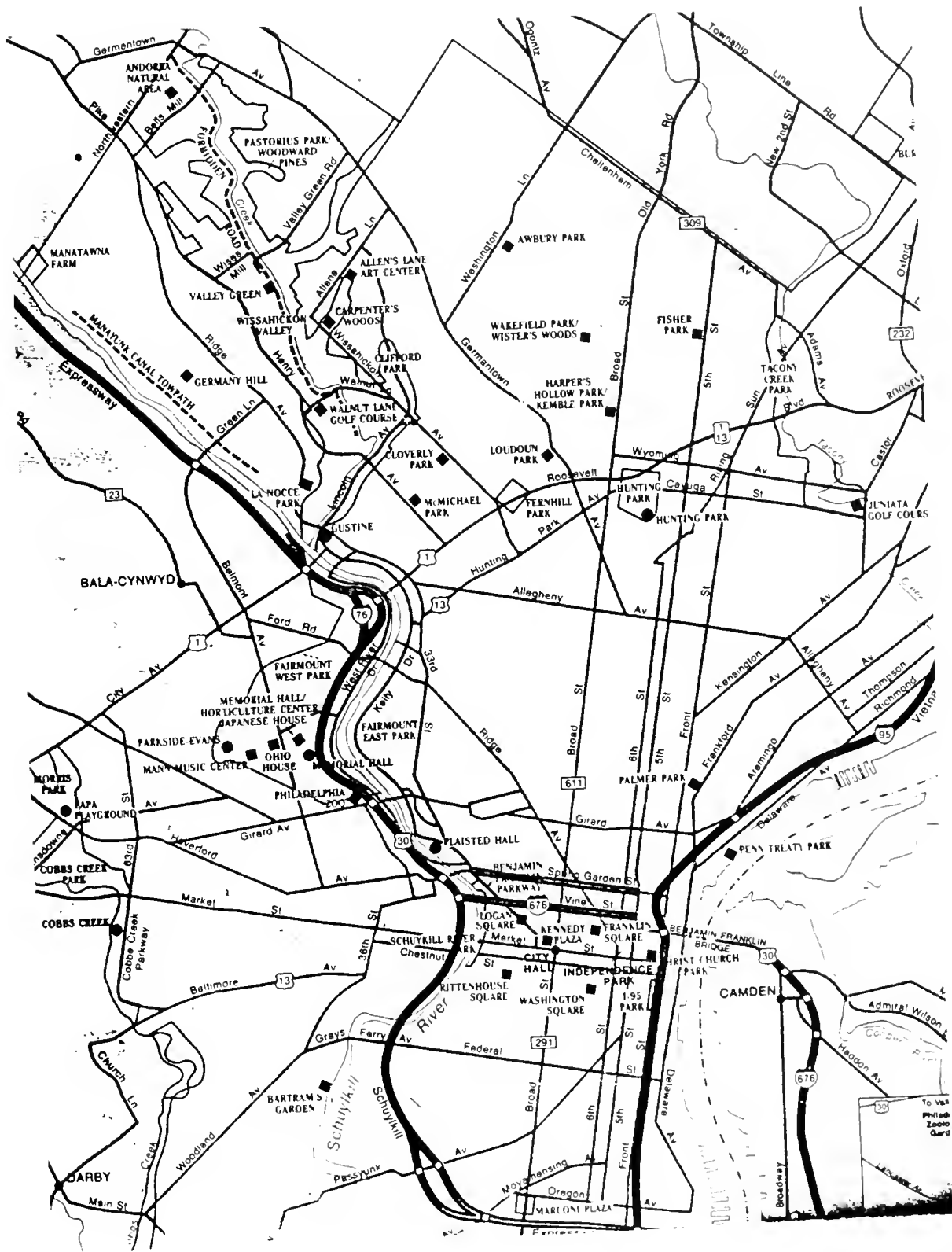
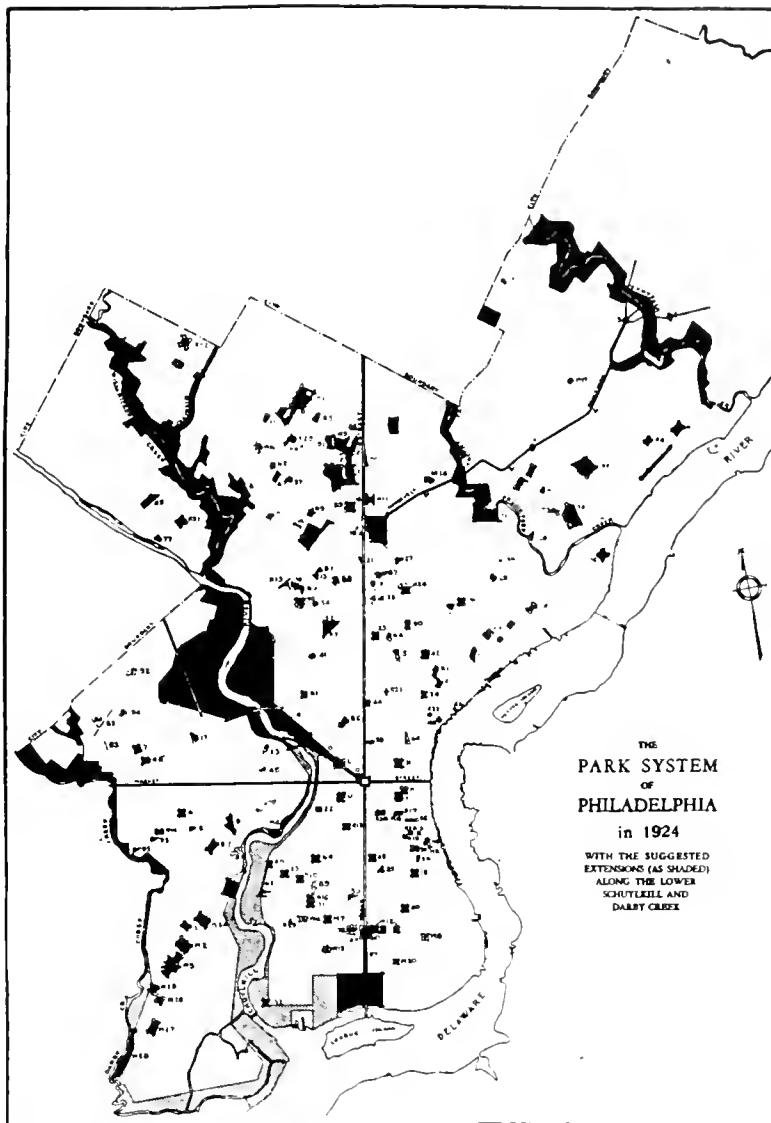


Figure 16. Map of Fairmount Park, (From Philadelphia Ranger Corps, "Philadelphia's Park System").



U.S. GEOLOGICAL SURVEY

SUGGESTED PLAN OF REDEMPTION.

Figure 17. "Suggested Plan of Redemption," (John Frederick Lewis, The Redemption of the Lower Schuylkill, 1924).



Looking north, at the summit.

Broun - 38

Plate 1. "Looking North at the Summit," Maurice Broun, 1938, (Hawk Mountain Sanctuary, c. 1934-40).



Plate 2. Looking North from North Lookout.



Plate 3. Allegheny Aqueduct, Looking Northeast.



Buena Vista

C. BROWN 1942

Plate 4. "Buena Vista," Maurice Broun, 1942, (Hawk Mountain Sanctuary Scrapbook, 1940-49).



Plate 5. Looking North from North Lookout.



Plate 6. Schaumboch's from the Mountain Road (Route 895).



Plate 7. Schaumboch's from the South Lookout.



Plate 8. Remnant of "The Slide."

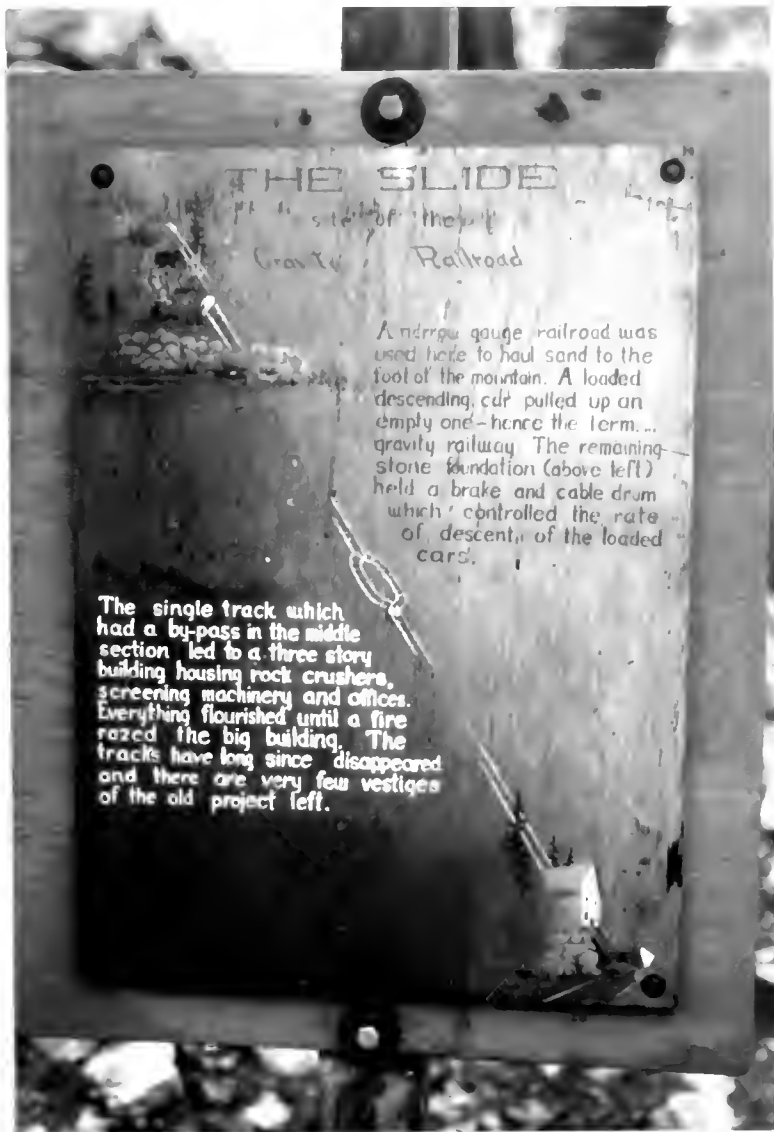


Plate 9. Signage for "The Slide."



Plate 10. Signage for "The Hall of the Mountain King."



Plate 11. The "River of Rocks" from South Lookout.

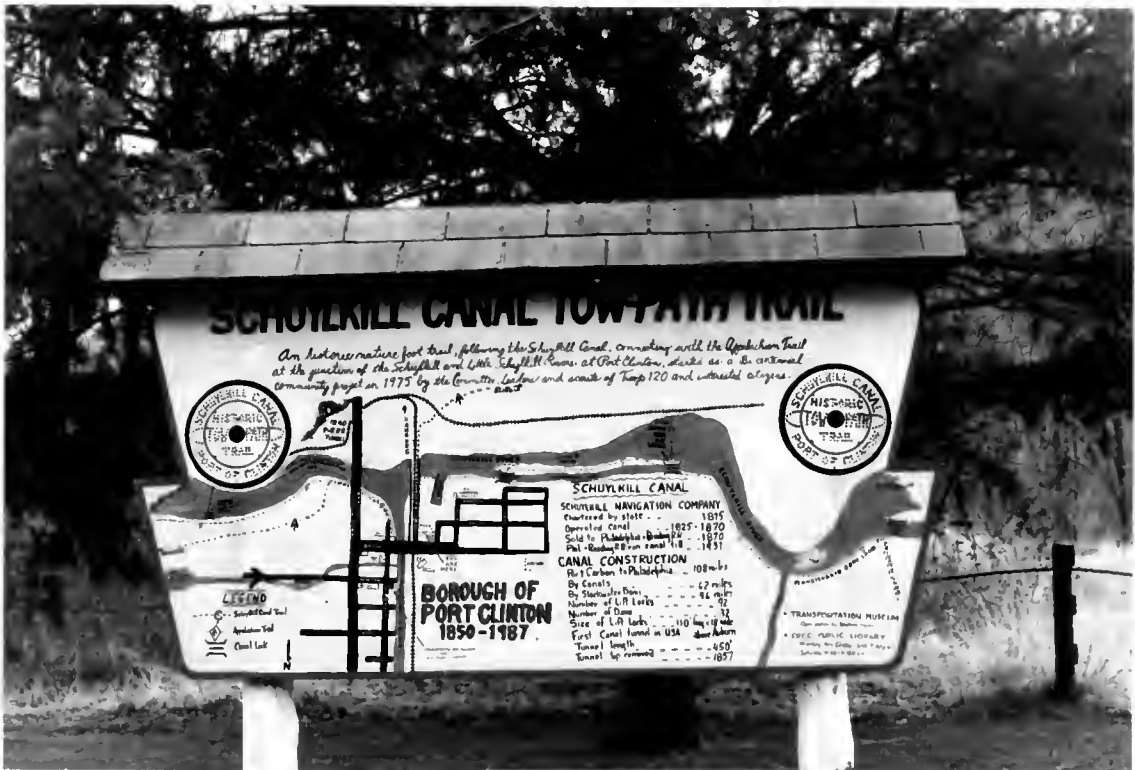


Plate 12. Signage for the Port Clinton Towpath Trail.



Plate 13. Towpath and Bumpers of Restored Aqueduct.



Plate 14. South (Upstream) Side of Aqueduct.



Plate 15. North (Downstream) Side of Aqueduct.



Figure 16. Aqueduct Capstones.



Plate 17. Ruin of Beidler's Mill.



Plate 18. Millhouse of Beidler's Mill.



Plate 19. Reading (Removed) and Pennsylvania Railroad Lines, Looking West.



Plate 20. Allegheny Aqueduct, 1899, (George M. Meiser, IX, and Gloria Jean Meiser, The Passing Scene, vol. 3 (Reading, PA: Historical Society of Berks County, 1984), 174).



Plate 21. Restored Canal Bed, Looking West.



Plate 22. Naomi Hotel, Seifert.



Plate 23. The Village of Seifert.



Plate 24. Allee Looking East, to River.



Plate 25. Allee Looking West, to House.



Plate 26. Cider Mill on River Trail.



Plate 27. River Trail at Bartram's Garden.



Plate 28. Recreation Fields to South.



Plate 29. Wildflower Meadow to North.

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